NATIONAL CHILD SURVIVAL
AND SAFE MOTHERHOOD PROGRAMME

MANAGE THE COLD CHAIN AND OTHER SUPPLIES

Ministry of Health and Family Welfare
Government of India
New Delhi
1992

GOALS AND COMPONENTS OF NATIONAL CHILD SURVIVAL AND SAFE MOTHERHOOD PROGRAMME

GOALS

- **Infant mortality rate** reduced from 80 to 75 by 1995 and 50 by 2000.
- **Child (1-4 years) mortality rate** reduced from 41.2 to < 10 by 2000.
- **Maternal mortality rate** reduced from 400 to 200/100,000 by 2000.
- **Polio eradication** by 2000.
- **Neonatal tetanus elimination** by 1995.
- **Measles** - prevention of 95% deaths and 90% cases by 1995.
- **Diarrhoea** - prevention of 70% deaths and 25% cases by 2000.
- **Acute respiratory infections** - prevention of 40% deaths by 2000.

Components of this package would be:

Children

Newborn care at home - warmth and feeding.
Primary immunization by 12 months - 100% coverage
Vitamin A prophylaxis (9 months to 3 years) - 100% coverage
Pneumonia - Correct case management at home/health facilities.
Diarrhoea - Correct case management at home/health facility; ORS in every village.

Pregnant Women

Immunization against tetanus - 100% coverage
Anaemia prophylaxis and oral therapy - 100% coverage
Ante-natal check-up - at least 3 check-ups in 100%
Referral of those with complications
Care at birth - promotion of **clean** delivery
Birth timing and spacing

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MANAGE COLD CHAIN AND OTHER SUPPLIES

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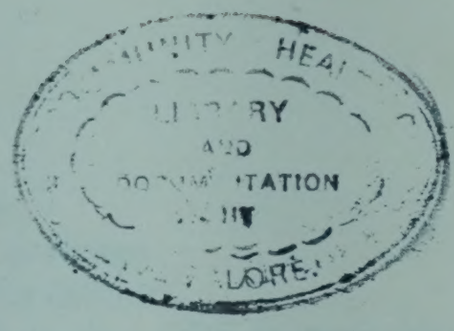

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MANAGE THE COLD CHAIN SYSTEM AND OTHER SUPPLIES

1.0 INTRODUCTION

LEARNING OBJECTIVES

Integration of logistics and maintenance of supplies for various mother and child health interventions is one of the major strategies of the Child Survival and Safe Motherhood programme. This module will provide you with skills to keep vaccines potent, maintain, monitor and use cold chain equipment, drugs and other supplies under the programme. This module is organized in two sections:

Section A : Deals with storage, distribution and monitoring vaccines as well as maintenance of various cold chain equipment.

Section B : Deals with sub-centre drug kit and other supplies.

SECTION A: MANAGE THE COLD CHAIN

Cold chain is a system of transporting and storing vaccines at recommended temperatures from the manufacturer to the point of use. The cold chain system is necessary because vaccines lose potency when exposed to heat. Some vaccines are more sensitive to heat than others. Polio vaccine is the most sensitive to heat, while Tetanus vaccine is the least sensitive. The order in which vaccines lose their potency when exposed to heat is as follows -

* Polio
* Measles
* BCG
* DPT
* DT
* Tetanus

When vaccines lose their potency, they can no longer protect individuals adequately from a disease, and therefore become useless. Vaccine potency once lost cannot be regained. Returning vaccine to a refrigerator or freezer will not restore its potency.

If vaccines are, however, kept at the recommended temperature range, they will remain potent for a long period of time. All vaccines retain their potency at temperatures between +2° and +8° Celsius. The vaccines must be transported and stored at the recommended temperatures to and from district and PHC stores.

For long term storage, measles and polio vaccines are kept at sub-zero temperatures. If freezers are available, these vaccines should be kept in a freezer.

DPT, DT, TT and BCG vaccines should not be frozen. BCG ampoules are likely to crack when frozen. DPT, DT and TT vaccines are also referred to as T-series vaccines.

Vaccines should not be exposed to direct sunlight.

The loss of potency depends on temperature and duration of exposure. At high temperatures, even a short duration of exposure makes the vaccines ineffective. For example, freeze dried measles vaccines kept at +5° Celsius will maintain potency for at least two years. But the same measles vaccine exposed to +40° Celsius will loose its potency in less than one day.

COLD CHAIN SYSTEM

This consists of a series of storage and transportation links during which maintenance of temperature is required to keep vaccines potent. The risk of Cold Chain failure increases as the vaccine moves along the Cold Chain from manufacturer to the mother or child being immunized.

The essential elements of the Cold Chain are :

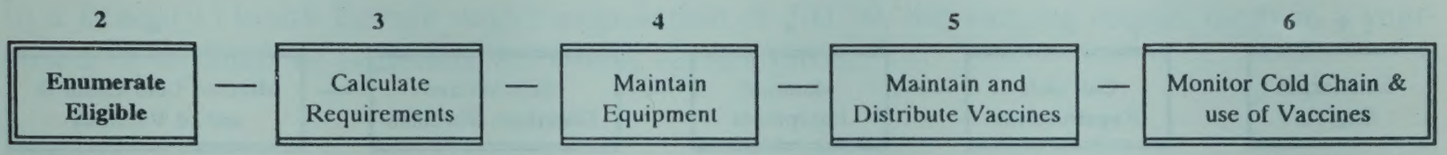
- People to organize and manage vaccine distribution
- Equipment to store and transport vaccines
- Transport facilities
- Proper maintenance

Often cold chain is thought to refer only to the refrigeration of vaccines. Even if the finest and most modern equipment are available cold chain will not be effective unless people handle the vaccine properly. Therefore, it is people who are the key to an effective cold chain.

You should ensure that the following are done at all levels:

1. Enumerate eligible
2. Calculate requirements of vaccines and other supplies
3. Maintain Equipment
4. Maintain and distribute vaccines and supplies
5. Monitor Cold Chain
6. Plan alternative vaccine storage arrangement
7. Plan and implement a repair and spare part management system for your cold chain equipment

2.0 ENUMERATE ELIGIBLE



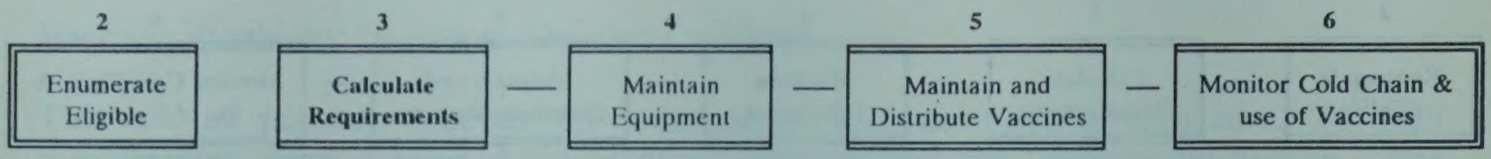
The vaccine requirements depend on the number of eligible beneficiaries and the number of sessions. The simplest and best way to know the total number of eligible is **house to house enumeration of**

(1) pregnant women and

(2) infants.

Although enumeration can be done at any time of the year, it is done ideally in the month of April every year. Use the MCH register for enumeration. Sample format of the same is given in the Annexure - Mother and Child care record. Regular updating of the register must be done during the routine visits. Pregnant women should be registered between 12 to 16 weeks of pregnancy. The village-wise sub-centre record will be used for enumeration and registering beneficiaries. Also refer to the section 2.0 on Estimation of Eligible in the module "Plan and Implement MCH Services".

3.0 CALCULATE REQUIREMENTS



3.1 CALCULATE VACCINE REQUIREMENTS

Estimation of vaccine requirements and ordering for the right quantities of vaccines is CRITICAL for maintaining cold chain. Four factors are important in calculating vaccine requirement. These are:

(i) number of beneficiaries to be covered - all pregnant women and surviving infants should be immunized. For details refer to section on Estimation of Eligible in the module - "Plan and Implement MCH Services".

(ii) number of doses of vaccines to be given - you should include boosters in the requirement.

(iii) vaccine administration rate - all doses of a vaccine used at a health centre cannot be administered because opened vials should be discarded at the end of the session. For the district as a whole, on an average, the wastage of all vaccines should not exceed more than 25% except for BCG and measles where the wastage may be upto 50%. At sub-centre level, the wastage rates may be higher and in large hospitals lower. The administration rate of vaccines can be kept at 75% for all vaccines (except BCG and measles where it is 50%) by proper scheduling of immunization sessions which has been discussed in detail in the module on "Plan and Implement MCH Services".

Wastage multiplication factor is the factor by which we multiply the number of doses to be actually administered to get the number of required doses.

The doses required will be:

BCG and measles = Number of doses to be administered x 2
DPT,OPV,TT,DT = Number of doses to be administered x 1.33

Wastage multiplication factor is 2 for BCG and Measles and 1.33 for the remaining vaccines

FOR EXAMPLE

In a Primary Health Centre with a population of 30,000, the vaccine requirement in a year based on number of beneficiaries would be as follows:

Eligible

* Pregnant women (3.2%)	=	960		
* Infants born (3%)	=	900		
* Infants alive at one year (92% of born)	=	828[1]		
OPV/DPT doses to be administered (includes 3 primary doses and one booster dose)	=	828 x 4	=	3312
OPV/DPT doses required (where 1.33 is the wastage multiplication factor)	=	3312 x 1.33	=	4405

The vaccines are supplied in 10 or 20 dose vials or ampoules. The required number of doses are divided by 10 or 20 and rounded off to the next higher number of vials or ampoules. However, please understand that these estimates of vaccine requirements are based only on eligible population, number of doses to be given, and wastage multiplication factor. The fourth and most important factor one should consider is the number of immunization sessions.

(iv) Number of Immunization Sessions

For achieving 100 per cent coverage, the vaccine requirement calculation must consider the number of immunization sessions scheduled and number of beneficiaries likely to come to each session. This has been worked out for a district as follows:

* In every sub-centre area, a minimum of four immunization sessions per month should be scheduled. Three should be organized in villages other than the sub-centre headquarter village. You will organize in every PHC (of 30,000 population) at least one immunization session per week; in bigger institutions, the number of immunization sessions will have to be more frequent depending upon the number of beneficiaries e.g. Medical College and district hospitals provide immunization on all working days (300 in a year) sub-divisional hospitals 3 times a week, town level hospitals and PHCs in tehsil towns twice a week.

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[1] The average infant mortality rate being 80 per thousand live-births, it is expected that 92% of live-births will survive beyond one year.

* Immunization sessions organized in the sub-centre area including the sub-centre headquarter village are designated "outreach sessions" as the sub-centres do not have any vaccine storage facility. Immunization sessions conducted at institutions which have vaccine storage facilities (ILR/Chest Freezers) are known as "fixed centres" for immunization.

(v) Estimate the number of vials required for individual vaccines[2].

MONTHLY VACCINE REQUIREMENT : A READY RECKONER

Sl. No.	Popu-lation	Community	Estimated Beneficiaries Monthly		MONTHLY VACCINE REQUIREMENT					Cold Chain Equipment
			Preg. women	Infants	DPT (Vials)	OPV (Vials)	BCG* (Ampoules)	Measles (Vials)	TT (Vials)	
1.	1000	Village/Ward	3	3	2	1	1	1	1	DC
2.	2000	-do-	7	6	3	2	1	1	2	DC
3.	3000	-do-	10	9	4	3	1	2	3	VC
4.	4000	-do-	14	12	5	3	1	2	3	VC
5.	5000	-do-	17	15	7	4	1	2	4	VC

GUIDELINES FOR VACCINE REQUIREMENT CALCULATIONS

* You should calculate vaccine requirements for your health centre area according to the number of sessions planned for a month. Remember that you should not plan more than one session per 1000 population per month. Thus if you are responsible for organizing immunization sessions in a population of 30,000 you would plan a total of 30 sessions per month. You should attempt to schedule four sessions per sub-centre area (i.e. one session/week) in such a manner that most of the population of the sub-centre is covered.

* Once a week session at a PHC serving 30,000 population and twice or thrice a week, at the CHC sub-district level hospitals is considered adequate. Large urban hospitals, e.g., district hospitals should provide daily immunization session (300 days/year)

* The wastage rates of vaccines would be less in large urban health facilities and more at peripheral levels. The wastage rate would vary from sub-centre to district level. However, overall wastage rate at the district level should not be more than 25% for DPT, OPV, TT and DT vaccines and 50% for BCG and measles.

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[2] The monthly vaccine requirement

* Yearly requirement of vaccine at sub-centre, primary health centre at 30,000 population, CHC at 100,000 population and a district of 2 million population has been done for your ready reference in the Annexure. The calculation is on the basis of sessions. Also BCG and OPV vials have been assumed to have 20 doses each while for rest of the vaccines it has been 10 doses/vial. You may need additional OPV doses for mop-up rounds or ring immunizations (outbreak response) during outbreaks.

* Estimate vaccine requirements in vials. Refer to Page 6 - "Monthly vaccine requirement : a ready reckoner".

EXERCISE A

As the Medical Officer in-charge of a CHC catering to a population of 100,000, you are responsible for providing 100% immunization. There are 3 PHCs and 20 sub-centres in your area. It is estimated that there will be 3200 pregnant women and 3,000 infants in your area. There are in all 115 villages out of which 90 villages have a population of 1000 or more.

Method No. 1

Calculate the vaccine requirement in a year according to number of expected beneficiaries alone. (The expected number in case of DPT/OPV will include 3 doses of primary immunization and 1 dose of booster).

Consider (20 dose per vial for OPV and BCG and all others 10 dose per vial)

Vaccine	DPT	OPV	BCG	MEASLES	TT
No. of Vials					

Method No. 2

Calculate the vaccine requirement in a year according to the total number of sessions if outreach sessions are limited to sub-centre headquarters once a month.

	Expected beneficiaries/session			
	DPT/OPV	BCG	MEASLES	TT
PHCs(3)/CHC (1) 4 times a month	40	11	8	18
Sub-centres - (20) once/month	48	13	13	25
Total Number of vials				

Method No. 3

Calculate the vaccine requirement in a year if outreach sessions are held in all 90 villages having 1000 population or above once/month

	Expected beneficiaries/session			
	DPT/OPV	BCG	MEASLES	TT
PHCs - requirements as above	40	11	8	18
Villages once a month	12	4	3	6
Total Number of vials				

You would have noted after working out the above exercise that your calculation of vaccine requirement is different when you use different methods of calculating vaccine needs.

EXERCISE B

Situation: The number of children under one year of age in the area served by your health centre is 2,500. You are currently half-way through a supply period of one month. The stock records show that you have a stock of 1,500 doses of measles vaccine with you.

Questions:

1. Is there too much or too little measles vaccine in stock ?

2. What are the possible causes for this situation ?

3. What actions would you take to correct it ?

4. How will you prevent the situation from recurring ?

EXERCISE C

Situation: The district store informs your health centre that it will not be able to deliver the vaccine you need on schedule.

Question: What would you do?

3.2 COLD CHAIN EQUIPMENT

Cold chain equipment is supplied under this programme as per norms discussed below:

Walk-in-coolers

Walk-in-coolers (WIC) have been established for regions comprising 4-5 districts. These WIC maintain three months supply of vaccines for all the districts they serve. Distribution of vaccine and other supplies for the Child Survival and Safe Motherhood programme in each region has been integrated at WIC locations. Hence it is important that you know their locations.

Exercise D

Write down the locations of Walk-in-coolers in your state. Also, list out the districts, each of themselves.

Location of WIC	Districts Covered
1.	
2.	
3.	
4.	
5.	
6.	
7.	

(Consult your course facilitator for correct answer)

Large Deep Freezers and Large Ice Lined Refrigerators (ILRs) of 300/240 litres

Almost all districts have one large freezer and one large ILR. Densely populated districts and WIC stationed districts have been supplied extra units.

Small Deep Freezer and small ILR

As per norm one set (small Deep Freezer and small ILR) per PHC has been provided to majority of PHCs in rural areas. In urban areas, the Urban Family Welfare Centres and/or Post-partum Centres as well as CGHS dispensaries have been supplied the sets.

Cold Boxes and Vaccine Carriers

They have already been provided in adequate numbers, with spare ice packs to all peripheral units.

NORMS FOR COLD CHAIN AND STERILIZATION EQUIPMENT/SUPPLIES

Item Description	Norms
Walk in Coolers	1 per 4-5 districts
Freezers 300 litres	1/Dist. + 2/WIC
ILR 240 litres	2/Dist[3]
ILR 300 litres	1/Dist.+ 1/WIC
Set of ILR and Freezer (140 litres)	1/PHC + UHC
	1/PHC + CGHS
ILRs (140 litres)	1/CGHS Dispensaries
Freezer 140 litres	1/5 CGHS Dispensaries
Voltage Stabilizer	1 for every ILR/Freezer of 300/240 litres
	1 for set of ILR + Freezer (140 litres)
	1 for every ILR/Freezer (140 ltrs) where installed
Cold Boxes 20 litres	1/PHC
Cold Boxes 5 litres	1/PHC
Vaccine Carriers (4 ice packs)	1/SC
Day Carrier (2 ice packs)	1/SC
Autoclave	1/PHC
Sterilizer Drums	2/autoclave
Steam Sterilizer (Double Rack)	1/SC
(consistency of nomenclature)	
Dial thermometer	1/unit of ILR/Freezer
Kerosene Stoves	1/SC
Ice-packs	50-100/per unit

[3] Not supplied at present

Needles and Syringes

For each sub-centre of 5,000 population following quantity of syringes and needles is required in one year:

Glass syringes		**Numbers**
o 5 ml (for mixing)	=	5
o 2 ml (for DPT, TT, Measles)	=	30
o 1 ml (for BCG)	=	10

Needles		**Numbers**
o 20 G (for mixing)	=	10
o 23 G (for DPT, TT, Measles)	=	120
o 26 G (BCG)	=	40

This requirement is calculated on the assumption that:

- o each glass syringe can be sterilized and used at least 40 times; and
- o each needle (20 g and 23 g) is used at least 10 times.
- o each needle (26 g) is used at least 5 times.

Mother-Infant Immunization Card/Immunization Card

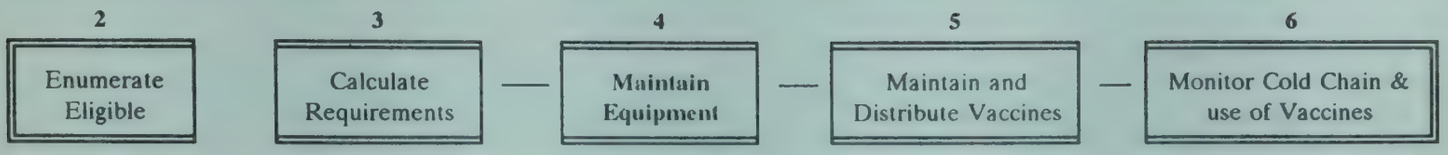
Around 150,000 mother-infant immunization cards, 15% above the absolute requirement are being provided under the programme for every district. There are 1500 to 2000 villages in an average district, and each one of them would be provided with one register.

Every pregnant woman needs to get a mother-infant immunization card (immunization card). The same card should be used for her baby. During the initial part of the programme, however, it will be necessary to give separate cards to mother and child.

Sub-centre (5,000 popn.)- first year		160 for pregnant women + 150 for infants + 15 % wastage
Subsequent years	-	160 cards + 15% wastage
PHC (30,000 popn.)- first year	-	960 for pregnant women + 900 for infants + 15% wastage
Subsequent years	-	960 + 15% wastage

These cards should be made available to NGOs/private practitioners who are providing immunization and other MCH services. Please note that the new card under the programme has to be used for children upto 3 years for recording the Vit A doses given. However, you will not use a new card for recording the Vit A doses beginning at 2nd or 3rd year. The card in which you record the immunization doses will be used for recording Vit A doses.

4.0 MAINTAIN EQUIPMENT



4.1 MAINTAIN EQUIPMENT AT SUB-CENTRE AND PHC LEVEL

If the cold chain is to be effective, its equipment must be maintained properly. Also, you should ensure that preventive maintenance of cold chain equipment is undertaken at your level of programme implementation.

At sub-centre:

- Vaccine Carrier and Day Carrier

At Health Centre:

- Ice Lined Refrigerator (ILR)
- Deep Freezer
- Cold Box

4.1.1 Vaccine Carriers

Vaccine Carriers are used for carrying small quantities of vaccines (16-20 vials) to the sub-centres or villages by health workers. The Vaccine Carriers are made of insulated material, the quality and thickness of which determine the cold life of the carriers. The ice packs for lining the sides of the carrier should be fully frozen and the lid of the carrier should be closed tightly. **THE VIALS OF DPT, DT and TT VACCINES SHOULD NOT BE IN DIRECT CONTACT WITH THE FROZEN ICE PACKS.**

To pack :

- Take out Vaccine Carriers and confirm that there are no cracks.
- Take out the required number of ice packs and wipe them dry.
- Place fully frozen ice-packs in the carrier and wait for few minutes for temperature to fall to less than 8 degree Celsius.
- Put vaccine vials and ampoules in a polythene bag and close it.
- Stack vaccines and diluent in the carrier.
- Place some packing material between DPT vaccine and the ice to prevent them from touching the ice packs.
- Secure lid tightly.

If more than one Vaccine Carrier is being carried, keep the whole range of the vaccines required for the day's use in each carrier so that only one carrier is opened at a time.

To keep the Vaccine Carrier in good condition when not in use:

- o Clean and dry the inside after every use
- o Examine the inside and outside surfaces after every use for cracks
- o Keep vaccine carriers away from direct sunlight and other sources of sunlight, as this will heat them and may cause the plastic to crack.
- o Do not sit or place anything heavy on a Vaccine Carrier

The vaccine carriers with four ice packs can keep the vaccines cold for 2 days if the **ice-packs used are fully frozen** and the lid of the carrier is kept tightly closed.

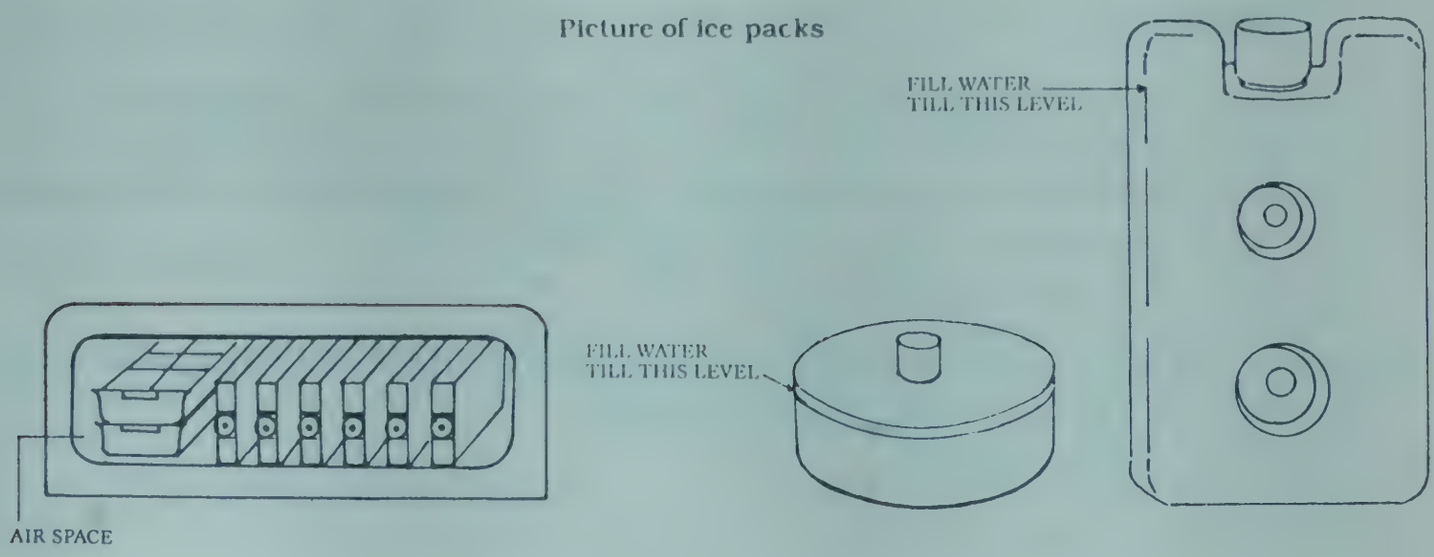
4.1.2 Day Carriers

Day Carriers i.e., smaller vaccine carriers are also available in India. These have two ice-packs, one each at the top and bottom. They can carry only a few vials (6-8 vials) at a time and can keep vaccines safe only for one working day (6-8 hours). **If the duration of storing unused vaccines is likely to be more than 6 hours, Day Carriers should not be used.**

4.1.3 Ice-Packs

Ice-packs are used for lining the walls of Cold Boxes and Vaccine Carriers to keep them cold. They are flat plastic bottles filled with water. The ice packs are prepared by keeping them in the freezer or in the freezer compartment of an ordinary refrigerator. The time taken to freeze an ice pack is reduced if the ice packs stand with their edges in contact with evaporator and not flat on one another.

Picture of ice packs



Standard ice-packs filled with clear water should be used.

Salt should **NEVER** be added to the water, as it lowers the temperature to sub-zero level which is not recommended for DPT, DT, TT and BCG.

You will have to prepare ice-packs at the PHC for carrying vaccines to the sub-centres or the outreach sites. To freeze the ice-packs fully, keep them in the freezer at least overnight (minimum 12 hours), preferably for 24 hours. Keep 6 ice-packs in the freezing chamber of a refrigerator and 16-24 ice packs in the deep freezer for 24 hours. You can add same number of ice packs every 24 hours for freezing. **Do not load more than specified number of ice packs at any given time.**

Coloured ice-packs should not be used as they do not contain pure water and have got a lower freezing point (-32 C).

EXERCISE E

Situation: Two months ago, you administered measles vaccine to 37 children in village 'X' who were 9-12 months of age. Today you learn that during the last three weeks there have been 12 cases of measles and 2 deaths in village 'X' from among the vaccinated children. This has been confirmed by an epidemiological investigation. Your supervisor has determined that the vaccine was potent when it was issued to you. But clearly, same vaccine was not potent when it was administered.

Question: 1. Identify five possible causes of this problem.

2. What will you do to prevent this problem from recurring?

EXERCISE F

Situation: The frozen ice-packs in your vaccine carrier melted within two hours

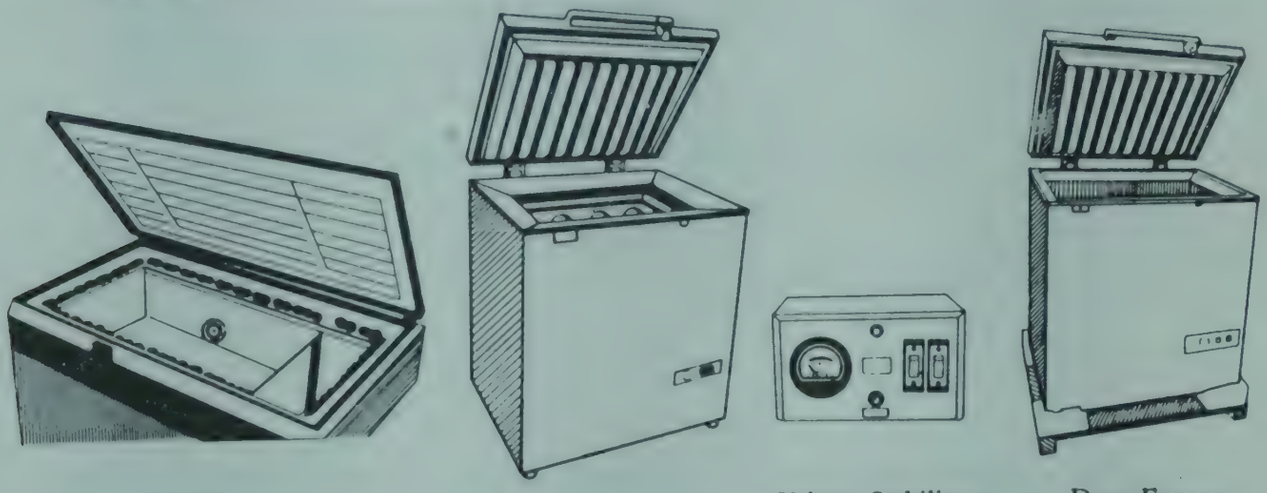
Question: 1. Identify five possible causes of this problem.

2. What will you do to prevent this problem from recurring?

4.1.3 Ice-lined Refrigerator (ILR)

ILRs are top opening refrigerators. Under the National immunization programme, two types are in use, one with ice tubes and the other with ice packs as the ice lining. These act as a buffer in case of power failure by preventing a rise in temperature inside the refrigerator.

ICE-LINED REFRIGERATORS (ILRs)



Electrolux | Vest Frost | Voltage Stabilizer | Deep Freezer

The bottom of these refrigerators is the coldest place. DPT, DT and TT vaccines should not be kept directly on the floor of the refrigerators as they can freeze and get damaged. KEEP BCG, DPT, DT and TT VACCINES IN THE BASKET provided with the refrigerator.

Keep the dial thermometer inside the ILR to record the daily temperature even if there is an in-built thermometer.

There is **NO FREEZER COMPARTMENT IN THE ILRs**. You cannot freeze ice packs or ice in the ILRs.

The Electrolux type of ILR can also be used as a deep freezer also by changing the switch to the appropriate position. [There is no such arrangement in Vestfrost ILR. In case of Vestfrost, a Deep Freezer is supplied separately.] In an emergency, if you wish to prepare ice packs in these ILRs, you must switch it on to work as a freezer. But before you do this be sure that you have transferred DPT, DT, TT and other vaccines that are damageable at sub-zero temperature to another refrigerator or to an already prepared Cold Box. The Cold Box must have the required number of solidly frozen ice-packs and the vaccines should be in polythene/cardboard boxes before transfer.

Ordinarily, ILRs must be used only as a refrigerator for storing vaccines even when there is another refrigerator in your office. The risk of cold chain failure is far less in an ILR than in a conventional refrigerator specially where there are periodic power failures. However,

in some PHCs where the ILR has not been supplied as yet, the vaccines may be stored in a conventional refrigerator till an ILR is received.

The DOs and DONTs for use of ILR/Freezer

DOs

- o Keep the equipment in a cool room away from direct sunlight and at least 10 cms away from the wall.
- o Keep the equipment level.
- o Fix the plug permanently to the socket.
- o Use voltage stabilizer.
- o Keep the vaccines neatly with space between the stacks for circulation of air.
- o Keep the equipment locked and open it only when necessary.
- o Defrost periodically (detailed subsequently).
- o Check the temperature twice a day and maintain a record which should be supervised regularly.
- o Take remedial action if the temperature is not maintained within the prescribed limit.
- o Outside the equipment paste a notice that helps the user during a break down.
  - whom to contact and where to check for a blown fuse
  - alternate place for vaccine storage

DONTs

- o Do not keep drugs
- o Do not open the door/top unless necessary
- o Do not keep food or drinking water in the refrigerator
- o Do not keep more than one month's requirements
- o Do not keep vaccines which are expired.

FOLLOW FIRST-IN-FIRST-OUT RULE

Vaccines with an early expiry date or received earlier should be used first.

ILR/FREEZER CHECK LIST FOR PREVENTIVE MAINTENANCE

A. External	
1. The exterior is clean	
2. It is firm on the floor	
3. It is properly levelled	
4. Its sides are minimum 10 cm away from any wall or object	
5. It is away from direct sunlight	
6. The room is well ventilated	
7. Lid is kept locked	
8. Keys kept at easily available place	
B. Internal	
1. Lid seals properly without gap	
2. Lid seal is clean	
3. Ice-lining tubes/ice packs are in proper position (for ILR only)	
4. Ice lining tubes/ice packs filled to proper level (no leak)	
5. Thickness of frost formation is not more than 6 mm	
6. Vaccines preserved in neat rows	
7. There is space between rows for air circulation	
8. DPT and TT vaccines are kept in the basket and not touching any cooling surface (for ILRs only)	
9. Separate dial/stem thermometer kept among the vaccine	
10. Reading of dial/stem thermometer	
C. Technical	
1. Reading on the built-in thermometer of the equipment	
2. Thermostat setting	
3. Temperature indicated is within specified range. (If not, adjust thermostat to obtain steady temperature within specified limits. Note: Present thermostat setting ————————)	
4. Voltage stabilizer connected	
5. Input voltage reading ———————— volts	
6. Output voltage reading ———————— volts	
7. Plug of voltage stabilizer fits properly and not loose on the power socket	
8. Connections of equipment to voltage stabilizer proper and not loose	
9. Compressor compartment and the components inside are clean	
10. Electrical connections are proper	
11. No abnormal noise	
12. Cooling fan (if any) works properly	
13. Compressor and fan mounting bolts are tight	
14. Pipe or components are not out of position and not touching others	
15. Temperature recorded is minimum twice a day	

NOTE: For any "negative" answer, take action

4.1.4 Deep Freezer

It is also a top opening equipment. It is to be used for storing polio and measles vaccine and freezing of ice-packs. A pair of Deep Freezer (140 litre) and a Vestfrost ILR (140 litre) is connected to a common voltage stabilizer. Do not store BCG and T series vaccines in the deep freezer.

Defrosting and Cleaning

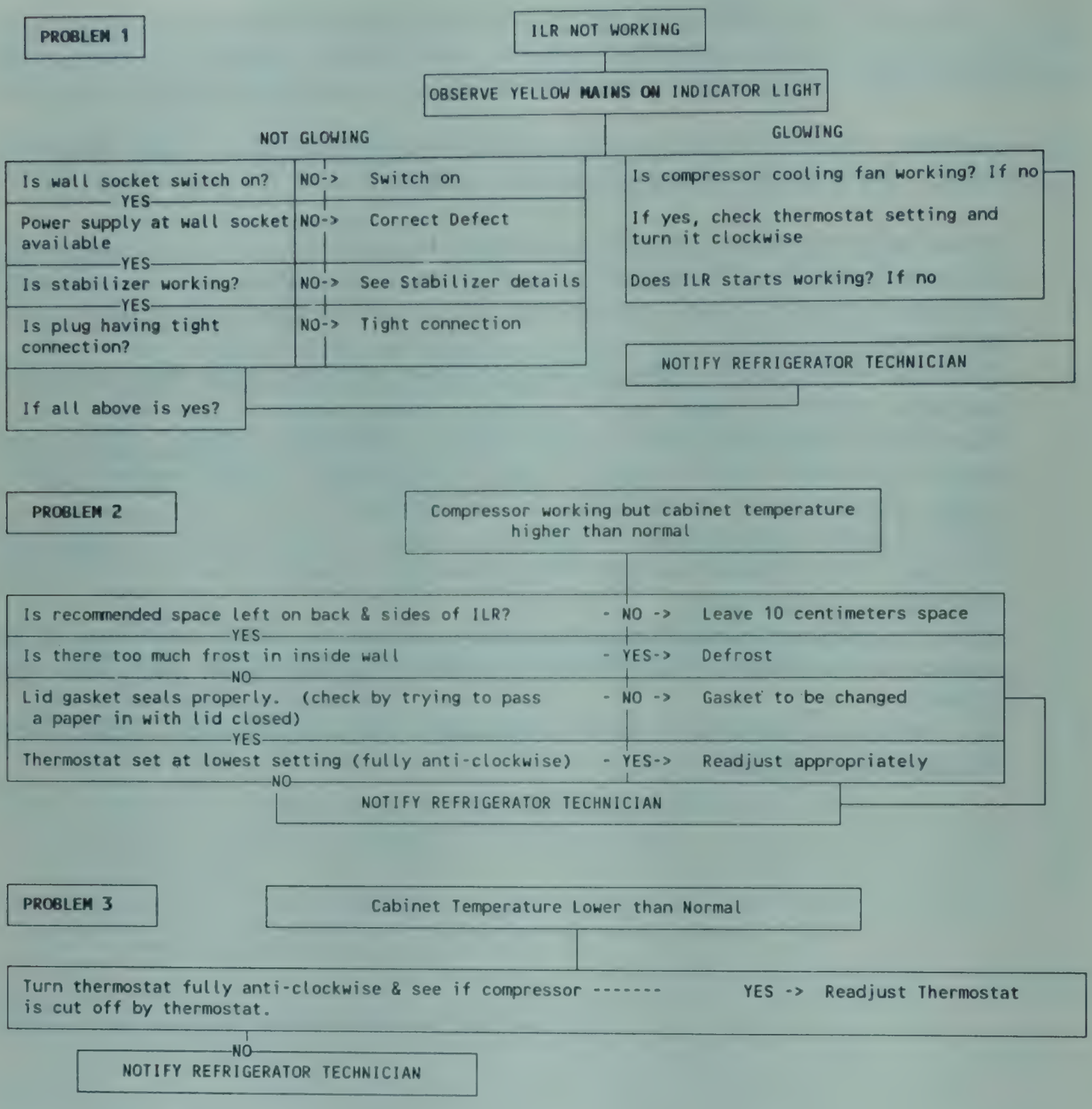
The temperature in the ILR/Freezer can rise if there is a thick layer of ice around the freezer or along the walls and bottom of ILRs. It is therefore necessary to defrost the them periodically. This should be done if the ice in the freezer is more than 6 mm thick.

As a supervisor, you have to ensure that the Deep Freezers/ILRs are regularly defrosted and cleaned. The following points should be observed:

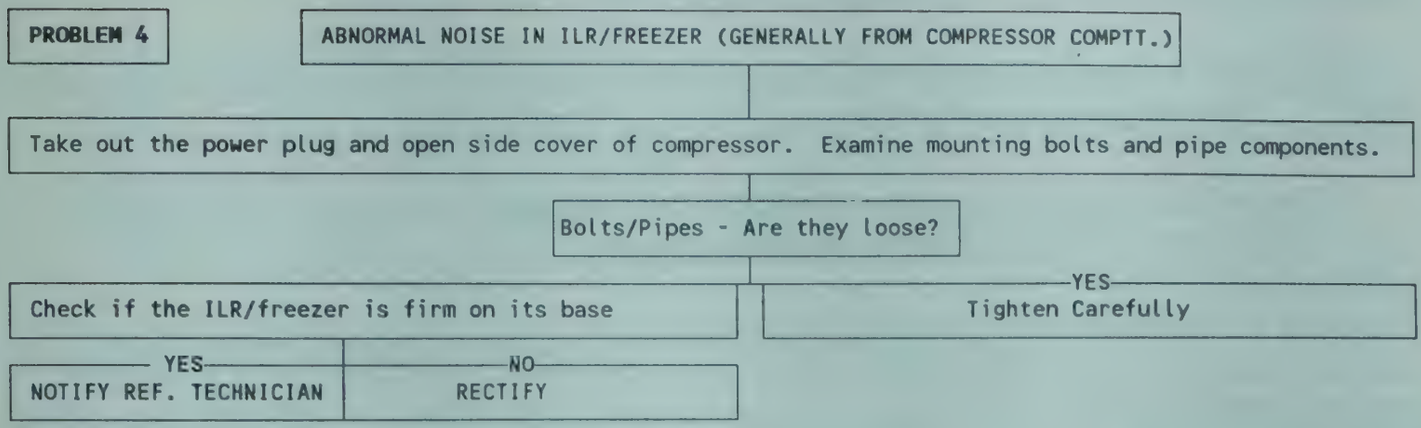
- Power supply needs to be switched off and the plug removed from the wall socket
- Vaccines need to be transferred to the Cold Box (or another ILR) for temporary storage. In case of Freezer, take the frozen ice-packs out and keep them in a cold box or close together.
- Open the defrost water outlet plug at the bottom of the cabinet. Keep a suitable container under the drain hose to collect the defrost water.
- Keep the lid open and allow the frost to melt completely. Never use any heat source other than warm water to speed up defrosting. Never use any sharp-edged instrument for removing frost or for cleaning.
- Wash all parts inside the cabinet with warm water and mild detergent, wipe it dry with clean cloth. Never use any strong detergent or rubber reactive material for cleaning the rubber seal.
- Allow the cleaned parts to dry completely. Reset the drain outlet plug at its position at the bottom, close the lid. Connect the power supply plug to the wall socket.
- Turn the thermostat knob to right (clockwise) to maximum position. Observe the temperature and reset.

> The lid of a Freezer/ILR may be stuck immediately after closure for a few minutes due to negative pressure. Do not force open the lid. Wait for a few minutes and try again. Lid will open easily

COMMON PROBLEMS IN ILR/FREEZER : TROUBLE SHOOTING


PROBLEM 1
ILR NOT WORKING
OBSERVE YELLOW MAINS ON INDICATOR LIGHT
NOT GLOWING
GLOWING
Is wall socket switch on?
NO-> Switch on
YES
Power supply at wall socket available
NO-> Correct Defect
YES
Is stabilizer working?
NO-> See Stabilizer details
YES
Is plug having tight connection?
NO-> Tight connection
If all above is yes?
Is compressor cooling fan working? If no
If yes, check thermostat setting and turn it clockwise
Does ILR starts working? If no
NOTIFY REFRIGERATOR TECHNICIAN
PROBLEM 2
Compressor working but cabinet temperature higher than normal
Is recommended space left on back & sides of ILR? - NO -> Leave 10 centimeters space
YES
Is there too much frost in inside wall - YES-> Defrost
NO
Lid gasket seals properly. (check by trying to pass a paper in with lid closed) - NO -> Gasket to be changed
YES
Thermostat set at lowest setting (fully anti-clockwise) - YES-> Readjust appropriately
NO
NOTIFY REFRIGERATOR TECHNICIAN
PROBLEM 3
Cabinet Temperature Lower than Normal
Turn thermostat fully anti-clockwise & see if compressor is cut off by thermostat.
YES -> Readjust Thermostat
NO
NOTIFY REFRIGERATOR TECHNICIAN

NOTE: Till repair is done preserve vaccines by replacing ice packs by non frozen ice packs and shutting of ILR at +2 C. Switch on when temperature reaches + 8 C and repeat.


PROBLEM 4
ABNORMAL NOISE IN ILR/FREEZER (GENERALLY FROM COMPRESSOR COMPTT.)
Take out the power plug and open side cover of compressor. Examine mounting bolts and pipe components.
Bolts/Pipes - Are they loose?
YES
Tighten Carefully
Check if the ILR/freezer is firm on its base
YES
NOTIFY REF. TECHNICIAN
NO
RECTIFY

The preceding flow chart indicates the common problems you may face and can be checked and rectified at your end. However, if the ILR still does not function repair may be needed. In case the defect is minor e.g. in (a) thermostat; (b) starting relay or (c) overload protector, then the machine can be repaired at site by the refrigerator technician. However, for major defects, e.g. leakage of gas (refrigerant) or breakdown of compressor the unit will have to be transported to the repair centre. The programme provides for contingency grant for ILR repair, including transport costs.

Preventive maintenance and timely repair will ensure that no more than 2% of the district's ILRs/Freezers are out of order at a given time. Equipment malfunction which cannot be corrected by the trouble shooting guide should be reported to the District Immunization Centre within 24 hours.

4.1.5 Dial Thermometers

Dial thermometers have been provided to record the temperature in the ILRs/Freezers. One dial thermometer should be kept in every unit. A staff member should be made responsible for recording the temperature. The booklet of 12 monthly temperature recording forms should be kept on the top of each unit and must be checked daily to see that the temperature record is maintained (format given in the Annexure). **The temperature record should be used to take action to shift vaccines to cold boxes or other refrigerators when necessary.**

4.1.6 Tubular Alcohol Stem Thermometers

These are supplied either in lieu of dial thermometers or with Vestfrost equipment. They serve the same purpose as the dial thermometer.

Recording & Monitoring of Storage Temperature

The temperature in the refrigerators MUST BE MONITORED TWICE DAILY (morning and evening). This is done in order to:

- Record that vaccines were not exposed to temperatures above + 8° Celsius.
- Check that the equipment is working properly.

You must be careful and ensure that the temperature in the ILR does not rise above +8° Celsius. Also you must check that the temperature does not fall below + 2° Celsius as it damages the T series of vaccines. Adjust the thermostat switch in different seasons to maintain the inside temperature of the equipment well within the prescribed range.

The temperature records should be used to take action to shift vaccines to Cold Boxes or other ILRs when temperature warrants. The sample of temperature record chart is annexed.

4.1.7 Cold Boxes

Cold boxes are big insulated boxes. They come in two sizes, 5 litres and 20 litres. They are supplied with requisite number of ice packs. The 5 litre cold box can hold one month vaccine supplies of a PHC of 30,000 population. 20 litres cold box has enough space to transport one month supply of a health centre catering for one lakh population.

Uses

- Collect large quantities of vaccines
- Transport large quantities of vaccine by vehicle to outreach sites
- Store vaccines for transfer upto five days, if necessary for outreach sessions or when there is power cut. The hold over time is more than 90 hours at + 43° C ambient temperature. You can also store vaccines in it while ice packs are being prepared in Electrolux ILR on Freezer mode.
- Store vaccine in case of breakdown of ILR

To pack

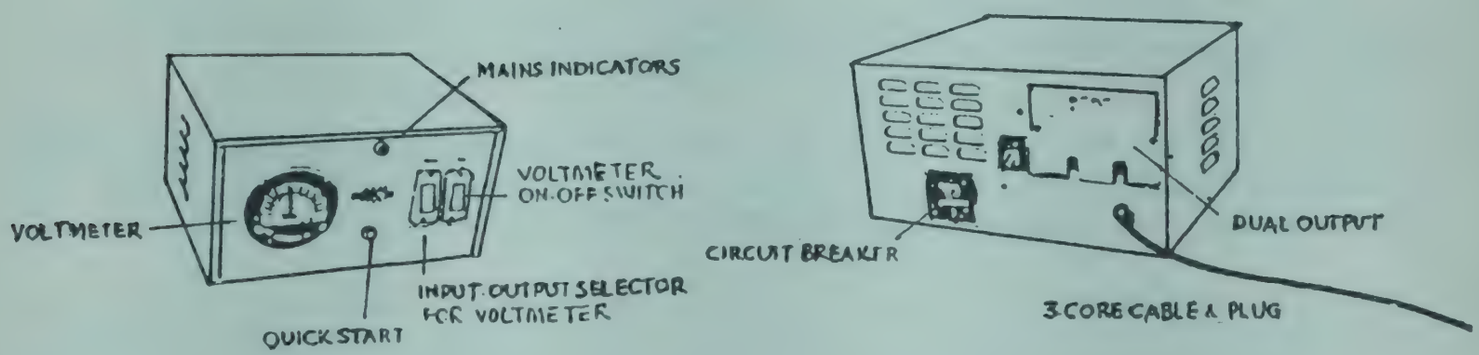
- Place fully frozen ice packs side by side against the inside walls *and floor* of the cold box.
- Stack vaccine and diluent in the box
- Place packing material between DPT/DT/TT vaccine and the ice pack to prevent vaccine from becoming frozen
- Place ice packs *over the top* of the vaccine and diluent
- Secure the lid tightly

To keep in good condition when not in use

- o Clean and dry after every use
- o Examine inside and outside surfaces after every use for cracks
- o Check that the rubber seal around the lid is not broken; if broken, replace immediately
- o Adjust the tension on the latches so that the lid closes tightly
- o Lubricate hinges and locks routinely

4.1.8 Automatic Voltage Stabilizer - 1 KVA (kilo volts ampere)

It provides an output voltage between 210 and 230 volts even when the fluctuations in the mains voltage is 150 to 280 volts and cuts off its output supply to ILR/Freezer in case main voltage goes below 150 or above 280 volts. However, output is restored automatically in about 2 minutes when main supply come back within above range. You can connect one large ILR/Freezer or a unit of small ILR (Vestfrost) plus small Freezer together to one voltage stabilizer. Its parts and features are given in diagram below:



The stabilizer has switch-on time delay of 2 minutes, but you can allow instant output by pressing the button marked 'QUICK START' in the above diagram.

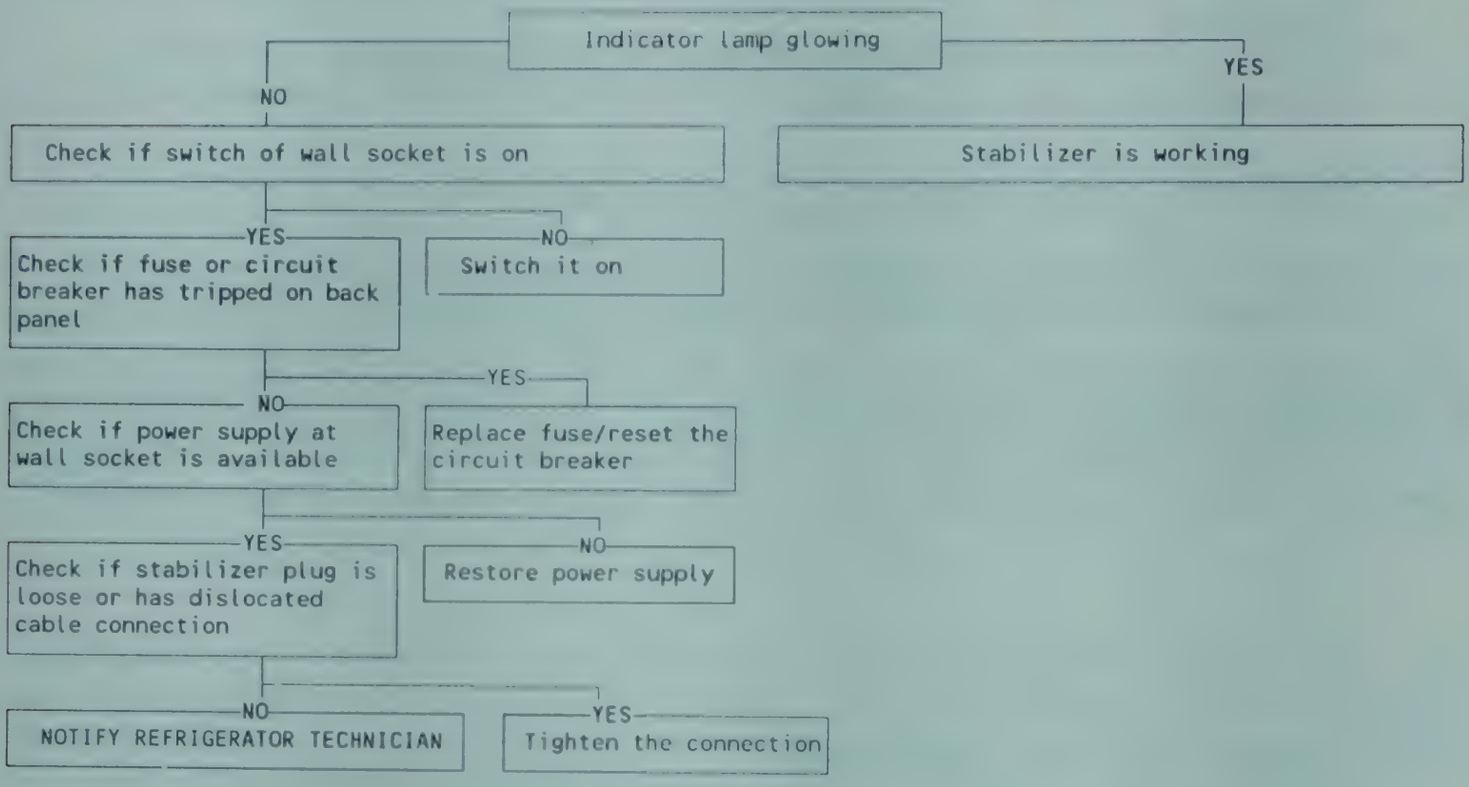
Continuous use of Voltmeter may be damaging. Switch it on only when you want to read input or output voltage.

The wires in the power supply cord are coloured as follows:

Green	-	Earth
Red	-	Phase (Line)
Black	-	Neutral

Common problems in stabilizer -- Trouble shooting

Note: First check that input voltage if the voltage is below 150 or above 280 volts, the stabilizer will not give output



In case of defect not removed by the above trouble shooting guide, you should immediately disconnect the voltage stabilizer and take it to the district headquarters. You should obtain a float assembly and get it fitted.

4.2 COLD CHAIN EQUIPMENT AT DISTRICT AND REGIONAL STORE

4.2.1 Cold Rooms - Walk-in-Cooler

Cold Rooms are used for the storage of large quantities of vaccines. There should be an assured source of constant electric supply and regular monitoring of the temperature. Cold rooms should have free access 24 hours a day and 7 days a week, so that in case of any breakdown or power failure the defect could either be rectified or the vaccines transferred to an alternate place for storage.

There is one staff member responsible for the WIC.

In case of major defects, you must inform the State Immunization officer and the National Immunization Mission immediately.

Contingency plans for cold storage in the district headquarters should be prepared in advance. This should include identification of alternate storage, as well as actions involved. All concerned should be aware of their respective activities during such emergencies.

Under the Child Survival and Safe Motherhood programme the role of WIC location has enlarged. It would serve as storage and distribution point for all replenishable items. It would also be responsible for maintenance of equipment as well as monitoring of vaccines and supplies.

4.2.2 Preventive maintenance of WIC and standby generators

Checklists for preventive maintenance of this equipment for technicians as well as operators is provided as annexure VI. You should ensure that these instructions are followed by concerned persons i.e. operators and technicians.

240-300 litre capacity freezers at district headquarters have been supplied for:

- Preparation of ice packs
- Preparation of ice
- Storage of polio, measles vaccines

DPT, DT, TT, and BCG vaccines and diluents should not be kept in deep freezers.

Only a limited number of ice packs (16-20) can be frozen in one day in this freezer. You must make your plans in advance and start freezing ice-packs several days before you need them. You may sometimes need a large number of ice-packs. If an ice factory is located nearby, you may seek its help in freezing ice-packs for you. The ILRs supplied to districts are to be used for storing BCG,DPT DT and TT.

4.3 STERILIZATION EQUIPMENT

For successful implementation of the programme, sterilization of syringes, needles and other equipment used in an immunization session is absolutely essential. If proper sterilization procedures are not followed, chances of adverse reactions will increase and the programme will suffer. Many adverse reactions are due to bad sterilization. It is important you supervise your worker during sterilization of syringes and needles. If the needles and syringes are not sterilized properly, there is a chance of transmitting various infections, including HIV/AIDS. The AIDS virus can be destroyed by autoclaving or boiling.

There are several ways of sterilizing needles and syringes. Following are sterilization methods utilized in the programme:

i) Autoclave
ii) Steam sterilizer (Double rack)
iii) Boiling

4.3.1 Autoclave

Only the non-electric autoclave is supplied under the programme.

How to use the autoclave:

- Place the autoclave on a stove after putting water in it up to the specified mark;
- Open the side holes of the dressing drum;
- Put the loaded drum in the autoclave. Make sure that the side holes are open.
- Put the lid of the autoclave on and tighten the screws diagonally, i.e. tighten the screws opposite one another before going on to the next pair.
- Check the pressure gauge to see whether it registers at zero or not. If it does not register at zero, note the reading.
- After some time the needle on the pressure gauge starts moving.
- When it registers 15 lb. pressure (p.s.i.), note the time. Let it remain at 15 lb pressure for 15 minutes.
- If when you started, the needle on the pressure gauge did not register at zero, add 15 to the initial reading and wait till the pressure builds up to the reading you have calculated.
- Switch off the autoclave or put off the burners.
- Let it cool/let off the steam.
- Remove the lid by loosening the screws on the lid.
- Remove the dressing drum and close the side holes by moving the side wall cover and lock it.
- Put the sterilization strip on the drum as described later.

How to pack the instruments (for autoclaving)

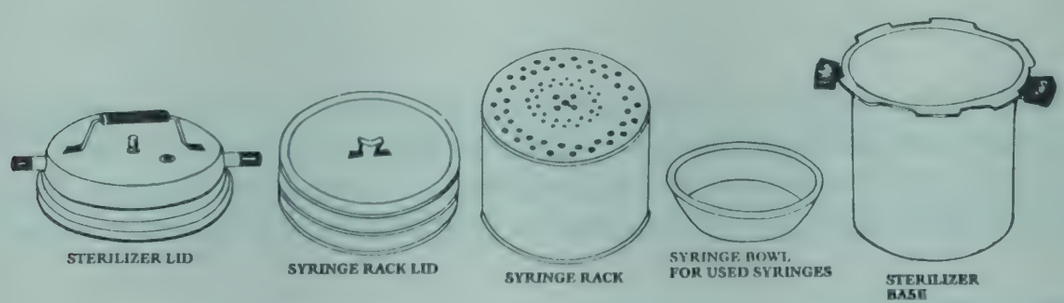
Packing syringes:

- Take the plungers out of the barrels
- Wrap glass syringes in gauze or cotton cloth. This is to stop them from breaking during transport. You do not need to wrap them if the session is in your health centre.
- Cut pieces of gauze 20 cm long from a roll.
- Use one piece of gauze for each syringe.
- Check that the barrel and plunger are a pair and that the plunger fits into barrel properly.
- Wrap the gauze first round the plunger and then round the barrel so that there is gauze between and around each pair.
- Pack the barrels and plungers or the gauze-wrapped glass syringes neatly into the container for sterilization.
- Put needles into their containers or stick them into a piece of gauze or cotton.
- Leave the container of needles open, and put it on top of the syringes. Put the cover beside it.
- Put two pairs of forceps into the sterilizer.

DO NOT FORCE OPEN THE AUTOCLAVE. ALLOW IT TO COOL

4.3.2 Steam Sterilizer (Double Rack)

The parts of a steam sterilizer are given in the figure below.



How to use a Steam Sterilizer

Take the rack out of the sterilizer base and place it on a table. Load syringes and needles that you want to sterilize. Place the larger syringes in larger holes and small syringes in smaller holes. Place barrel and plunger separately. Place needles for a particular sized syringe, side-by-side. This arrangement will make it easier to reassemble the syringes.

Put the rack lid on the rack and squeeze the clip on the lid so that it fits into the hole in the rack.

There is a mark inside the sterilizer base. Fill water upto this mark. If you have hard water in your area and no hard water filter is available, use boiled water.

Lift the rack by clip in the rack lid and put it into the sterilizer base.

Put the pairs of forceps on the rack lid. These will be required to reassemble the syringes in an immunization session.

Put the sterilizer lid on the sterilizer base, matching the arrow marks on base and lids, press down on the top handles of the lid and turn it clockwise to close the sterilizer.

Check that safety valve is closed. You will see that small pin in the rubber plug is down.

Sterilizer lid has a pressure valve too. Before you start sterilizing, close the pressure valve by pushing the lever down.

Place the sterilizer on a stove. After some time steam starts coming out of pressure valve. Count 5 minutes from this point and then reduce the flame. Keep it for another 15 minutes. Then lift the sterilizer from the stove and place it on a firm surface. Release the steam by lifting up pressure valve. It will take a long time for the syringes and needles to cool down. Therefore, try to sterilize your equipment well in advance of the session. If you have to sterilize during the session, you must allow the syringes and needles to cool down before you use them, otherwise heat will destroy the vaccine.

Open the sterilizer lid when syringes and needles are required. Turn the lid upside down. Forceps should be put on this lid and not any other surface. This will avoid contamination. Syringes are assembled using forceps.

If there is a pause in the immunization session, replace the lid.

4.3.3 Boiling

Only when autoclaving or pressure sterilizing is not possible for want of equipment, syringes and needles are sterilized by boiling for at least 20 minutes after water starts boiling. Do not put anything more into the saucepan after water starts boiling. Drain off all the hot water and allow syringes and needles to cool before use, keeping it covered.

4.3.4 Monitoring sterilization

This is done using **sterilization indicator strips**. The findings may also be documented in the register. These strips are stickers with an upper green half and lower white half. You should stick it on the objects you intend sterilizing to confirm that complete sterilization has taken place. If properly sterilized, the green portion of the indicator strip turns black/grey. If this colour is not changed, then sterilization is incomplete.

When sterilization by autoclaving is not possible for want of equipment, you can sterilize syringes and needles by 'boiling' for at least 20 minutes from the beginning of boiling of water.

- Write on lower blank/half of strip by a ball pen, the date, place and type of sterilization equipment you are using (autoclave or portable pressure sterilizer).

- Stick the indicator label on upper portion of sterilizing drum (if using autoclave) or on the upper portion of upper rack (if using double-rack sterilizer).

- Do the sterilization for recommended time after requisite pressure is built up. Allow sterilizer to cool.

- Note the colour of the upper green portion of the indicator. It will turn black/grey if sterilization was proper.

- If the green portion does not change colour, repeat sterilization using a new indicator strip for a longer time (5-10 minutes).

- Keep the unused indicator strips in a cool, dry place inside a plastic bag. Do not touch the green portion, to avoid stain.

4.4 BREAK DOWN OF EQUIPMENT - FOLLOW UP MEASURES

As a manager of the National Child Survival and Safe Motherhood programme either at the district or at the PHC level, you have played a major role in increasing coverage levels for immunization. The challenge for sustaining immunization activities lies in maintaining your equipment at various levels. So far, the system of maintaining equipment has been either ad-hoc or left entirely to personnel who were not able to appreciate the urgency of getting repairs done in time. Under the Child Survival and Safe Motherhood programme, it is intended to have minimal equipment out of order at any point of time, all repairs responded to and attended within 7 days in case they are minor, and within 21 days in case of major repairs.

As a supervisor of the functionaries who will be responsible for preventive maintenance at the PHC/district levels, and also of the mechanics who will be responsible for undertaking minor/major repairs, it is very essential for you to know:

* the details related to breakdown of equipment
* categorization of repairs as major and minor
* concept of float assembly/spare units to be redeployed to replace defective units
* spare parts should be available at various levels

In the next few pages, you will be learning about some of these details. Please take sometime to discuss these issues with your Cold Chain Officer/Mechanic/ Health worker responsible for maintaining equipment in your district/PHC.

The following are certain terminologies you should be familiar with:

Down Time: For a cold chain equipment down time means the period the equipment remains out of service **(e.g.** if an ILR is out of order on 10 April, and is functional again on 20 April, the down time is 10 days. Similarly, if an ILR is out of order on 10 April and is functional on 13 April, the down time is 3 days**)**.

Response Time: The time required to get the defect attended to from the time of sending information to actually attending it is called response time **(e.g.** if an ILR is out of order on 10 April and a message is sent for the mechanic, and a refrigerator mechanic attends to it on 12 April to check the fault, the response time is 2 days**)**.

Cold Chain Sickness Rate: This is the proportion of cold chain equipment out of order at any point of time **(e.g.** if there are 100 ILRs/Freezers in a district and 7 are out of order, the cold chain sickness rate on that day is 7%**)**.

Sickness reporting : Efficient reporting system contributes greatly to reduce the "down time" of the equipment and lead time for actual repair actions. It is desirable for efficient maintenance that the reporting should be direct from "who wants the service" to "who will provide the service" (with intimation to the other officers concerned.

The most reliable means of communication (post, telegraph, telephone, special messenger etc. in the concerned area) which is fastest should be used. The aim is to maintain a response time of one week.

Design your own reporting system which is "direct user to service centre".

You should establish a sound maintenance system in your district. You have to monitor its effectiveness. A good maintenance system must ensure that:

- at any point of time, not more than 2% of the cold chain equipment (ILR/Freezers) remain out of order; and all WICs are functional.
- break-down is reported and attended to immediately, and minor repairs carried out within 7 days and major repairs within 3 weeks of response by the district mechanic;
- Maximum 4-6 hours only must be allowed for repairing electrical faults of WICs.

Manpower deployment : Time consuming procedural formalities are shortened. The person in charge of the regional base issues the deployment/movement orders to the technicians to attend the repair jobs. In some cases when he cannot be empowered for the same, the procedures for obtaining concurrence from the higher required level is shortened as much as possible.

Every month, information has to be collected on the number of units functioning as well as on how soon repair was completed. You must take immediate action based on this information. In order to have an effective maintenance system, the following must be ensured:

- adequate quantity of spare parts for minor repairs, which should be available with the refrigerator mechanic. A list of the items to be carried by the district mechanic when he goes to attend to a break-down call, as well as the quantity, is given in Table in the following page. Fast moving spares should be available at WIC location.

- repairs are categorized as major and minor, and are also listed in the table. The district mechanic can undertake minor repairs on site, and must be fully equipped to do so. All major repairs will have to be undertaken at a workshop. The maximum time allowed for reinstallation of ILR/Freezer after a major repair including transportation to and fro is 3 weeks.

- the district mechanic should have contingency funds available with him for minor repairs (at least Rs.50/-)

ILR/FREEZER REPAIRS AT DIFFERENT LEVELS AND RELATED SPARES

Level	Repairs	Materials
AT SITE (PHC) MINOR	1. Starting problem 2. Thermostat 3. Electrical 4. Gasket damage 5. Lid problem	1. Starting device 2. Thermostat 3. Starting capacitor (Elx) 4. Fan motor (Elx) 5. 15A 3-pin plug top 6. 15A socket 7. 3 core cable 8. Insulation tape
REPAIR CENTRE (District/ Regional HQ) MAJOR	1. Gas leak 2. Compressor defect 3. Checking	1. Compressor 2. Starting device 3. Starting cap (Elx) 4. Thermostats 5. Fan motor (Elx) 6. Drier 7. 1/4" copper tubes 8. Refrigerant F-12 9. Compressor oil 10.Brazing rod 11.Brazing flux 12.Kerosene/LPG

Float assembly

A float assembly is a stock of spare units of cold chain equipment (at district/state headquarters) for immediate replacement of defective units (brought from the Primary Health Centres). The defective units once repaired goes into the float assembly.

Norms of float assembly at WIC location/District HQ :

1. ILR MK-140 5% at WIC point
2. Freezers SB-140 5% at WIC point
3. Voltage stabilizer - 1 KVA 20% at District HQ

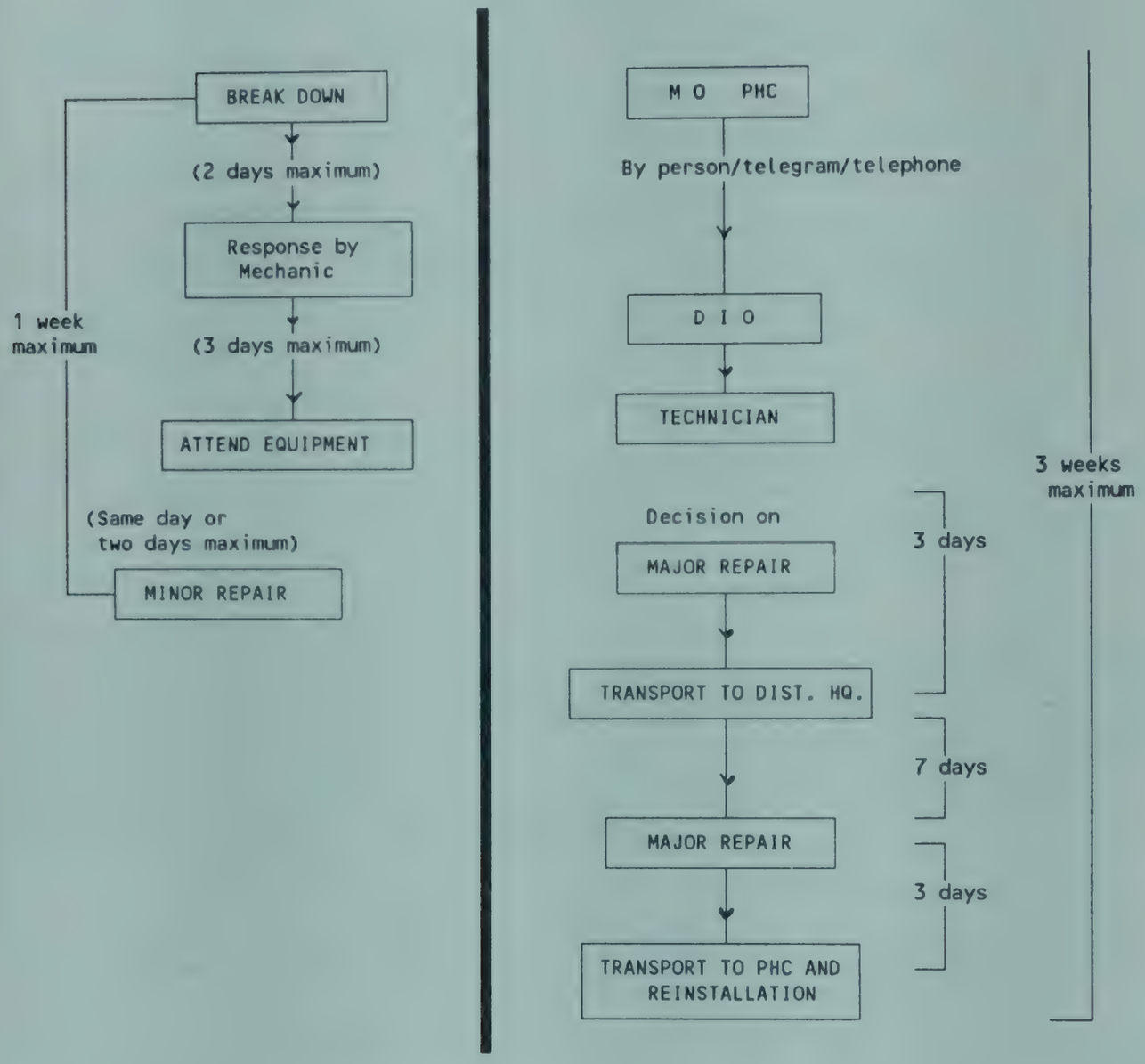
Float assemblies are required for the effective maintenance of the cold chain so that no time is lost while the machine is out of order. District mechanics should therefore have voltage stabilizers which they can replace at the site and bring the defective instruments back to the workshop. At district level, 20% spare voltage stabilizers should be available as a float assembly to ensure timely replacement.

LIST OF TASKS AT VARIOUS LEVELS FOR MAINTENANCE OF COLD CHAIN

Level	Action	By*	Frequency
PHC	1. General maintenance of ILR and Freezer	Pharmacists	Every day
	2. Vaccine handling	Pharmacists	Daily or as often as required
	3. Procure voltage stabilizer for replacement	Pharmacists	As and when required - within 2 days
	4. Response to Emergency	Pharmacist	Immediate
	5. Minor repair of ILR/Freezer	Ref. Technician	Within 1 week of breakdown (if present)
	6. Overall supervision	MO, PHC	
District HQ (and WIC)	1. General maintenance of ILR & Freezers	Supervisor	Every day
	2. Vaccine handling	Supervisor	Daily or as often as required
	3. General maintenance of WIC including refilling of POL, changing temp. record charts	WIC Technician	daily and as required
	4. All types of repair of WIC	WIC Technician	Minor-immediately Major-within 7 days
	5. Management of spares	Supervisor/WIC Technician	Regular
	6. Response to Emergency	Dy. CMO/DIO	Immediate
	7. Overall supervision	Dy. CMO/DIO	
Regional Repair Centre (W/S)	1. Major repair of ILR & Freezer	WIC & Ref. Technician	Within 5 days
	2. General maintenance and all types of repair of WIC	WIC & Ref. Technician	Mir or-immediately Major-within 7 days
	3. Management of spares	Store Keeper with Ref. Tech.	Regular
	4. Overall supervision	Addl. Director (Regional)	

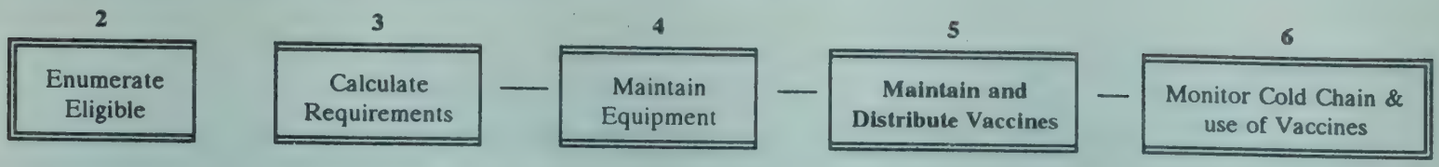
The responsible person for the tasks will vary from state to state and within a state in different districts. The State/district MCH officer should clearly identify the responsible person in the beginning of the programme itself.

Given below is a Flow-chart giving details of responsibility following repair of a unit for an effective maintenance system:



As you will note from the flow-chart above, you will ensure that the minor repairs take only 7 days and the major repairs are carried out within a period of 3 weeks. The repairs which are considered as major or minor are already given in the table on page 37.

5.0 MAINTAIN AND DISTRIBUTE VACCINES



The objective of good vaccine handling is to minimize:

- The period of time in which all vaccines are exposed to temperatures above +8°C and DPT, DT and TT vaccines below 0°C
- The period of time in which any vaccine remains in cold chain stores without being used

5.1 SUB-CENTRE/VILLAGE LEVEL

The risk of cold chain failure is greatest at sub-centre and village level. For this reason, the health worker is the most important link in the cold chain. **VACCINES ARE NOT STORED AT THE SUB-CENTRE LEVEL AND MUST BE SUPPLIED ON THE DAY OF USE.**

In order to keep vaccines safe at this level,

- Only required quantities must be supplied;
- The vaccine carrier must have frozen ice-packs.
- Immunization must be carried out in the shade, and vaccines (OPV and measles) must be kept on an ice-pack or in a cup of ice during the session.
- Only one vial of each vaccine should be taken out at a time.
- Unused vials must be returned to the PHC the same day.

You will assign the responsibility of vaccine supplies to the supervisors at the PHC. But the final responsibility for ensuring that cold chain operates efficiently and effectively is yours.

When administering vaccine to expectant mothers and infants at the site of immunization, you must take great care not to expose the vaccine to heat or direct sunlight. To do this:

- Select a site that is as cool as possible, preferably inside a room. If a room is not available, carry out immunization in the shade and not in direct sun.
- Open the carrier only when necessary
- Remove vaccine and diluent from the vaccine container, ONLY when you need it.
- Take out only one vial of vaccine from the container at a time. Do not take the second vial from the carrier until it is needed.
- Secure the lid tightly after opening as soon as possible.
- Wrap the BCG ampoules in a foil or a dark paper to protect them from heat and light.
- When you take vaccine out of the container, place vials on an ice pack. If no mothers or children are waiting, put the vials back into the cold chain container until a beneficiary arrives.

- When the session is completed, return all vials, open and unopened, to the health centre.

On returning to the health centre

- If ice packs in the carrier still contain ice: mark unopened vials by putting rubber band, and return them to the ILR/Freezer **BE SURE TO USE THESE MARKED VIALS DURING THE NEXT IMMUNIZATION SESSION.**

  Do not take the same vial of the vaccine out to the field more than THREE TIMES. If a vial of vaccine has been taken to the field third time, return it to the PHC after marking 'Discard'. You must however, be careful that vaccines are not wasted in this way too often.

  Keep opened vials in a plastic bag and return these to PHC at the end of the session. These are kept for testing, in case of an adverse reaction and discarded after one week.

- If the ice in the cold chain container is completely melted for less than one day :

  . Discard polio vaccine, so that no one else can use.
  . Mark the remaining DPT, Tetanus Toxoid, measles and BCG vaccine, return it to the ILR/Freezer and use it during the next session.

- If the ice in the cold chain container is **completely melted for more than one day,** throw away all vaccines.

- Update records on vaccine use

  . Keep a record of the vaccines you administer.
  . Keep record of the batch numbers and expiry dates of the vaccines used.
  . Keep record of vaccines returned to PHC.

5.2 PHC LEVEL

You will either collect vaccines from the district stores or these will be delivered to you. It is best that vaccines are obtained at regular intervals. For example, you might collect vaccines once a month or once every two weeks. However, you should collect vaccines at least once a month. This is because a **PHC MUST NOT HOLD MORE THAN ONE MONTH'S STOCK. NO VACCINE SHOULD BE STORED AT THE SUB-CENTRES.**

You must estimate your vaccine requirement so that every infant and pregnant woman is immunized, and that adequate supplies are available with you.

It is important that you obtain the right amount of vaccine. If you obtain too little vaccine, you may cause delays in your immunization activities. If you obtain too much vaccine, some of it may expire or it may be kept longer than the recommended time. Remember, the longer you keep the vaccines at the PHC, the greater is the risk of a cold chain failure.

Estimates of vaccine requirements are done as given in page 5. Check your stock. Keep 10% additional vaccines as buffer stocks for any unforeseen demand. The stock must be rotated so that no vaccine is kept for more than one month.

When you go to the district store to collect your vaccine

- Make sure you carry Cold Box or enough vaccine carriers to keep the vaccine you will collect. In general a Cold Box (5 litres) can accommodate one month's supply of a PHC of 30,000 population and a cold box (20 litres) for a CHC for 1 lakh population.
- Check that the types and amount of vaccine and diluent are the same as you need.
- Check the expiry date on each vial of vaccine.
- Pack the vaccine in a Cold Box or the Vaccine Carrier quickly but properly. For this transportation, diluent need not be kept in Cold Box/Vaccine Carrier.
- Use the shortest route to the health centre and cover the distance quickly but safely.
- Transfer vaccines to the ILR/Freezer immediately after you arrive at the health centre.
- If your vaccine is delivered to you by the district store:

    . Confirm the arrival time by telephone or telegram
    . See if the vaccine was transported in a Cold Box or Vaccine Carrier with ice-packs or ice.
    . Check that the types and amounts of vaccine and diluent are the same as you need.
    . Check the expiry date on each box of vials and all loose vials.
    . Transfer vaccine to the ILR/Freezer as quickly as you can.

5.3 STORE AND DISTRIBUTE VACCINES

All vaccines removed from the ILR/Freezer must be used or returned to the ILR/Freezer after the immunization session. Vaccine that has been returned unused and unopened must be used during the following session, or failing this, during the third session. If it is not used during the third session, discard it.

To ensure that **RETURNED** vaccine is selected first, place these vials in a box in the ILR marked "returned". Put one rubber band for the first visit, and two if the vial was taken out twice.

The vaccine with the nearest expiry date should be used first. Vaccine that has been supplied earlier should be used first.

If the vaccine date is expired, **DO NOT USE IT.**

Check that DPT, DT or TT vaccines have not been frozen. If these have been frozen, **do not use them.** You can confirm this by **shake test**. Shake the vial so that the sediment is completely mixed into the vial. If the vaccine is not uniformly mixed, or the sediment settles down at the bottom of the vial completely within 15 minutes, then do not use it.

- Diluent should be cooled before use.
- If the space is not adequate, the remaining stocks can be kept at room temperature.
- Sufficient quantity of diluent for the next day's use must be kept in the ILR and taken to the field in Vaccine Carriers.
- The diluent should not be frozen as the ampoules are likely crack when frozen.
- For the same reason BCG ampoules also should not be frozen.

Keep a record of storage temperature; monitor and take action when warranted.

You will be responsible for distributing vaccines for use in the sub-centres and also in the out reach sessions. Before sending vaccines, you must ensure :

- actual requirements of the sub-centre
- the ice packs of the vaccine carriers are fully frozen

The sub-centres should not be provided more than their daily requirement. Vaccines should be returned to the PHC on the same day. If it is not possible to return the vaccines on the same day, they can be sent on the next day only if the ice packs/ice has not fully melted. Opened vials of the vaccines should be sent to PHC for discarding and not reused the next day.

EXERCISE G

Situation: You are responsible for the cold chain at a district store. You have two refrigerators, one ILR and one freezer. You also have several cold boxes and vaccine carriers. At any given time you have at least 25,000 doses of any one kind of vaccine in your store. There is a power failure at your store.

Questions:

1. When should you make emergency plans and what should these plans include?

2. What would your emergency plan be if the electricity will be restored within 12 hours?

3. What would your emergency plan be if the electricity will not be restored within 12 hours?

When you have completed this exercise, consult a course facilitator to discuss your answers.

5.4 DISTRIBUTE VACCINES FROM DISTRICT/REGIONAL STORES

You will need to distribute vaccines to health centres in your region and to outreach units that operate out of your stores. A good manager at the regional WIC store and district store must ensure that adequate vaccine stocks (including buffer stock) is available for catering to the monthly needs of all service units being supplied by the particular WIC/district store. You will get vaccines from regional stores or manufacturers at regular intervals. Normally the supply will be for one to three months. This is because you will store vaccines for **no longer than three months in the district stores.**

REMEMBER vaccines have a limited shelf life and loose their efficacy easily if not handled properly. You should ensure that you get vaccines as per your requirement. Do not allow large stocks to accumulate. Check transport and storage arrangements. One person should be made responsible for receiving, storing and distributing vaccines.

Keep 10% additional vaccines as buffer stocks for any unforeseen demand. The stocks must be rotated so that no vaccine is kept for more than three months.

REMEMBER :

- Do not keep vaccines for more than three months at the district stores.
- Do not keep vaccines for more than one month at PHC
- Do not store any vaccines at sub-centres or outside cold chain.
- All vaccines are safe at temperatures between $+2^{\circ}$ to $+8^{\circ}$ Celsius for 4 months at least.
- Keep all vaccines at $+2^{\circ}$ to $+8^{\circ}$ Celsius. If you have a Freezer, polio and measles vaccines can be kept in them.
- DPT, DT and TT vaccines should not be frozen. DO NOT ALLOW THEM TO FREEZE.
- Transport vaccines in Cold Boxes or Vaccine Carriers only
- Check ice packs before packing vaccines.
- Travel by the shortest route

A good manager at the Regional WIC Store and District Store must ensure 3 months stock of all vaccines at any given time.

If the stock falls short of 3 months requirement, intimate State Immunization Officer, by letter.

If it falls short of 2 months requirement, contact State Immunization Officer over phone or in person.

5.4.1 Control Vaccine Stocks

You should know the amount of vaccine you have in storage and be sure that vaccine with earlier expiry date is used first. If two shipments of vaccines have the same expiry date, the one which has remained longer in the store should be used first.

Keep separate date-wise records of vaccine receipts, distribution and balance sheet for each type of vaccine and each size of vial. Note the expiry date of incoming batches and mark the arriving vaccine with arrival date (to provide a useful check on the age of the vaccine in the store). Keep records of vaccines distributed and estimated utilization at the centres.

5.4.2 Distribute Vaccine

Your major responsibility is to provide vaccines to health centres in time.

Before making supplies, you must check the following:

- o Requirements of the PHC (session-wise)
- o Utilization during the previous months. You can get this information from monthly monitoring report
- o Find out balance in hand

You should supply adequate quantities to meet requirements of PHCs.

* A good manager at the Regional WIC Store and district store must ensure 3 months stock of all vaccines at any given time.
* If the stock falls short of 3 months requirement, intimate State Immunization Officer, by letter.
* If it falls short of 2 months requirement, contact State Immunization Officer over phone or in person.

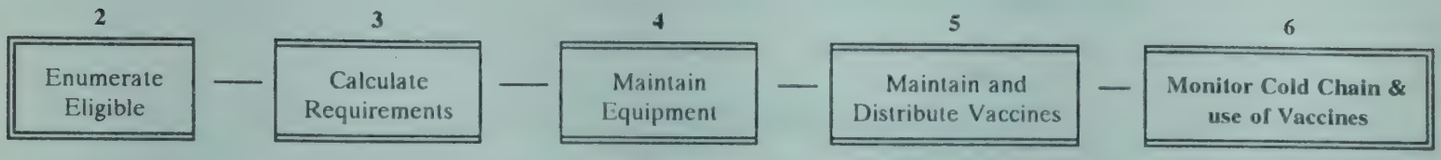
Vaccine utilization will depend on the number of immunizations performed and the number of sessions held. Add the total of all the doses of each vaccine given during the month and make an allowance for the administration rate. If the vaccine utilization is low, discuss the matter with the PHC Medical Officer.

Check that Cold Boxes and Vaccine carriers are sufficient in number and in proper condition. Check if ice-packs are frozen and number of Vaccine Carriers is sufficient.

If you are supplying vaccines, make sure that you prepare enough ice-packs prior to the date of vaccine supplies.

If vaccines are being collected from your store, keep ice packs handy. These can be replaced with unfrozen ice-packs brought from the PHCs which may not have enough freezing capacity.

6.0 MONITOR COLD CHAIN AND USE OF VACCINES



You will monitor regularly your cold chain system if you expect it to function effectively and efficiently.

You will need to monitor

* Supplies
* Storage temperature
* Potency tests

6.1 SUPPLIES

Regular and smooth flow of vaccines and their proper utilization will relieve many bottle-necks. It will avoid artificial shortages created by accumulation of large balance stocks at places where the programme is not functioning effectively. It will minimize risks of cold chain failures as the vaccines are kept for short durations at peripheral levels.

Arrange supplies according to demand and utilization. Estimate amount likely to be used from performance reports. A copy of standard format of monthly monitoring report is enclosed as Annexure. You can also assess the cold chain sickness rates using these reports.

Make a physical check of vaccine stocks during your supervisory visits. Make sure that records are properly maintained.

6.2 STORAGE TEMPERATURES

Temperature of ILRs/Freezers used for storage of vaccines must be recorded twice daily. These records should be checked during supervisory visits. A break in the cold chain is indicated if temperature rises above +8°C or falls below +2° C.

You may use the checklist for proper storage of vaccines in the ILRs/Freezers.

CHECK-LIST

A. Is the ILR/Freezer

1. Level?
2. Away from the sunlight?
3. Locked?
4. Defrosted periodically?
5. Plugged to socket permanently?
6. Used for keeping food or drink?
7. Kept adequately away (10 cms) from the wall

B. Are the vaccines

1. Stacked neatly?
2. Rotated?
3. Kept in the door?
4. Frozen? (except polio and measles)
5. Date expired?

C. Temperature chart

6.3 POTENCY TESTS

The ultimate test of the quality of the cold chain system will be its effectiveness in keeping vaccines potent till the point of use.

Testing facilities are available at the Central Research Institute, Kasauli (H.P.), National Institute of Communicable Diseases, Delhi and Enterovirus Research Centre, Bombay, School of Tropical Medicine, Calcutta and other centres in various parts of country.

OPV has been taken as "**indicator**" of quality of cold chain as this vaccine is more heat labile than other vaccines and is easier to test. The test takes only 7 days to complete using tissue cellose technique.

Opened vials can also be sent for testing and the vials should be lifted from all levels - from the village to district stores.

Samples from different immunization sites should be collected in Vaccine/day carrier with fully frozen ice packs. The samples so collected should be rushed to the headquarters in vaccine carrier observing all cold chain precautions. If delay is anticipated in transmitting sample for testing, such samples should be kept in a Deep freezer/ILR before they are sent to the testing laboratory. Maintenance of optimum temperature is 2-8 degree Celsius during collections, storage and transport of vaccine samples from site of use (immunization session) to the vaccine testing laboratory is called reverse cold-chain.

You must lift OPV vials during your field visits and send them to your state officer/vaccine testing laboratory as per guidelines given below. The laid down norm for sampling is one sample per PHC per year.

General Guidelines for Testing OPV Samples

- Total number of samples to be collected from the State in a year are prescribed. Roughly the number of samples to be collected are the same as the number of PHCs in the state.

- Out of the total number of samples, 30 per cent should be from out-reach sessions, 50 per cent from PHCs, 15 per cent from District Headquarters and 5 per cent from Walk-in Coolers.

- For samples collected from out-reach sessions and PHCs, care should be taken not to take more than one sample from one area/institution in a year.

- The team formed to collect samples should plan their visits in advance and also be responsible for maintenance of the reverse cold chain.

- The storage point for vaccines should be codified; so that relationship between samples and storage points can be easily established.

- The staff deployed to lift samples should carry extra vaccines vials in a vaccine carrier so that vaccines collected for testing can be replaced for use at the out-reach sessions.

- The samples collected should be rushed to Headquarters in a vaccine carrier and kept in the deep freezer before they are sent for testing in the laboratory.

Vaccine Efficacy

Epidemiologically more sound method than potency testing is calculation of vaccine efficacy by finding out the number of cases of disease who were vaccinated from the data of Sentinel Surveillance. This method is discussed in detail in the module "Conduct Disease Surveillance".

6.4 ALTERNATIVE STORAGE ARRANGEMENT - CONTINGENCY PLAN

The Cold Chain is dependant on electrically operated machines on which one cannot depend completely. However, acute problems are unlikely if the equipment are maintained well and used with proper care. Uninterrupted and steady electrical supply is a major requirement for good performance of equipment.

When the vaccines cannot be stored at the appropriate temperature due to breakdowns in equipment (WIC/ILR/DFs), alternative storage arrangements have to be made in advance to ensure that this contingency is taken care of. The alternative storage locations will have to be identified in advance.

Suitable posters will be designed and pasted on machines with clear instructions in local languages on how to handle such emergency situations.

DIFFERENT ALTERNATIVES TO BE IDENTIFIED FOR EMERGENCY SITUATIONS

Type of failure	Equipment	Primary Health Centre	Districts
Power failure of longer duration (more than 12 hours)	ILR	Observe temperature of vaccines. If it reaches 8°C, transfer and store them in cold boxes with frozen ice-packs from the freezer	Similar to PHC
	Freezer	As vaccines are not preserved in freezer, no action required.	If vaccines preserved in freezer, transfer them to cold box and preserve with frozen icepacks or commercial ice in polythene bags.
Equipment Breakdown (Select suitable alternative indicated)	ILR	a) Store in cold boxes with frozen icepacks b) Transfer to domestic refrigerator if available in the vicinity. c) Transfer to any nearby PHC or other departments vaccine storage facility if available	a) Store in cold box with frozen icepacks b) Transfer to other ILR or Refrigerator available c) Transfer to any other vaccine storage facility available.
	Freezer	Despatch vaccine: - using commercial ice, if available locally. - freeze icepacks in domestic refrigerator/s or in commercial ice factory, if available. - Collect required quantity of frozen icepacks from nearby PHC in cold boxes just on the day or a day ahead of vaccine distribution	- Store vaccine in ILRs or refrigerator available - Despatch vaccines - similar way as for PHC - Ask recipient of vaccine to bring frozen icepacks while coming for collection.
	Voltage Stabilizer	- Preserve vaccine as above - Disconnect the stabilizer and obtain replacement immediately from District/Regional HQ and reconnect.	- Replace from float assemblies immediately from District/ Regional HQ stock.

PLANS FOR EMERGENCY SITUATIONS must be prepared in advance and appropriate sanctions taken so that no time is lost during an emergency. This will help you face such eventualities without any element of panic. The following steps should be taken:

- o Identify most suitable alternative arrangement for each equipment.
- o List out the resources and actions involved and the persons identified to carry out the same.
- o Make aware all concerned of the requirements and the activities that may be necessary during emergency and educate/train them accordingly.
- o Identify more than one alternative for assurance (stand by arrangement).
- o Periodically check availability of the identified requirement and awareness of the persons concerned.

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SECTION B

7.0 SUB-CENTRE DRUG KIT AND OTHER SUPPLIES

In addition to sustaining immunization services, the National Child Survival and Safe Motherhood programme includes other interventions such as newborn care, Vitamin A prophylaxis, diarrhoea and pneumonia control, anaemia prophylaxis, ante-natal check-ups and referrals, care during childbirth and services for timing and spacing births. As you have already noted in the module on the "interventions" integrated logistics is one of the integral parts of the implementation of the Child Survival and Safe Motherhood programme. In this section we will review the logistics for various supplies for the programme.

Supplies under the programme are broadly grouped into two categories: recurring and non-recurring. As the latter are supplied only once, we will devote greater attention to the recurring supplies which as programme managers you will have to learn how they will reach you and your workers.

7.1 Non-recurring supplies

Non-recurring supplies are, primarily the cold chain equipment, vehicles and equipment kits, which will be procured and supplied to the districts. These are supplied only once. As a part of the sub-centre kit, every health worker (female) will be provided with a blood pressure instrument to measure blood pressure of pregnant women, weighing scale for monitoring weight gain of pregnant women and infant spring scales (5 per sub-centre) to ensure that birth weights of newborns are recorded in every village covered by the sub-centre area. A detailed list of the 18 items that will form a part of the sub-centre delivery kit is enclosed in the annexure.

7.2 Recurring supplies

These supplies are .

- Vaccines
- Sub-centre drug kits
- Needles and Syringes
- Disposable delivery kits and
- Others (e.g. dressings, cotton, antiseptic, etc)

Vaccines

Vaccines will normally reach the walk-in-cold rooms located in regional locations of the states from where they will be taken to the districts according to the needs from the district headquarters, vaccines will be delivered to the PHCs and other institutions which have storage facilities regularly based on norms you have already learnt under section 3.0

Sub-centre Drug kits

It is intended to distribute to every health worker one sub-centre drug kit at six monthly intervals. The drug kit will contain the following items:

- IFA tablets - large and small
- Vitamin A concentrated solution
- ORS packets
- Cotrimoxazole tablets
- Mebendazole tablets
- Needles and syringes
- Immunization cards
- Mother and child care records
- Oral contraceptive pills
- Conventional contraceptives (condoms)

Till the pre-packed sub-centre drug kit start arriving, many of these items will be distributed individually through the existing pattern i.e. from the medical store depots to the states and district headquarters and then to the PHCs/sub-centres. Of these the mebendazole tablets will be procured by you or by your state health department from the state health budget. As a manager of the child survival and safe motherhood programme you will have to ensure that every item meant for your sub-centres reach your health workers. The supplies are not meant for substitute use (as a placebo) in your primary health centres for out-patients and in-patients.

Certain supplies such as ORS packets will not be supplied in adequate quantities to meet the needs of all children with diarrhoea in your area. You should ensure that your health worker promotes buying of these items from various local stores particularly when the community can afford. This means that during supervision you will pay special attention to identify such stores and determine if the ORS packets available there are the WHO recommended formula.

Disposable delivery kits

As a manager of the programme, you will have to look for local district-based women's groups who can be organized through DWCRA, etc., to prepare disposable delivery kits required for your area. Once you have identified one such group, you will inform the State MCH office and liaise with the project officer of DWCRA or secretary of the women's groups to have the kits produced. The contents of the kit will be a piece of soap, sterilized cord tie, clean new blade and sterile gauze. They should be packed in a new polythene cover and sealed.

Others

In certain districts, you may also have to organize supply of chloroquine tablets in consultation with the District Malaria Officer. This will be done if your district is included for malaria chemo-prophylaxis programme for pregnant women.

7.3 NORMS FOR OTHER SUPPLIES[4]

Exercises A and C in this module were done by you to understand the calculations for vaccine requirements. Now you will proceed to learn about the norms for the sub-centre drug kits.

Requirements have been worked out for an average district of two million population with the following characteristics:

o Infrastructure

Population - 2,000,000
District Hospital - 1
Sub-district, urban and CHC hospitals - 20
Primary health Centres - 50
Sub-centres - 400

o Target Population

Pregnant women - 64,000 (3.2%)
Infants - 60,000 (3%)
Children between 1 and 2 years - 58,000 (2.9%)
Children between 2 and 3 years - 56,000 (2.8%)
Children under 5 years - 260,000 (13%)

Iron and folic acid (large) tablets[5]

For universal coverage of **64,000** pregnant women every year, the requirement will be 64 lakh tablets. In addition about 50% of the pregnant women i.e. 32,000 pregnant women will be anaemic and therefore, would require 100 additional tablets per beneficiary. Thus, the total requirement would be 96 lakh tablets per year.

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[4] Although supplies for vaccines are calculated on the basis of infants alive at one year, the norms for drugs and other supplies are based on average population in different age groups.

[5] During 1992-1993 every pregnant woman will receive 200 tablets of IFA containing 60 mg of elemental iron and those with anaemia will receive 100 additional tablets. Thus the requirement will be 128 lakhs tablets for prophylaxis and 32 lacks more for anaemic pregnant women. This means the total IFA (large) tablets required for a district will be 160 lakhs.

Iron and folic acid (small) tablets

Children under five years of age with anaemia diagnosed clinically will be given IFA tablets (small) containing 20 mg of elemental iron. Every child diagnosed clinically has suffering anaemia will be given 100 tablets after deworming. It is estimated that 40% of children under five years of age will require anaemia therapy. Thus out of 260,000 children in a district, 104,000 will require 104 lakhs IFA (small) tablets.

Vitamin A concentrated solution

In a district of 20 lakh population, 60,000 infants would require one dose each of 1 lakh unit; 58,000 children of 1-2 years and 56,000 children of 2-3 years will require two doses each of 2 lakh units. Thus, the total requirement in doses will be 288,000 doses every year. Allowing for a wastage of about 20%, the requirement for a district, which with an infant population of 60,000 will be 346,000 doses. For therapy the estimates done above will be adequate.

Mebendazole tablets

Fifty per cent of pregnant women (in their 2nd and 3rd trimesters) and all children with anaemia (40% of the total) will require deworming with mebendazole tablets. This means that 32,000 pregnant women and 104,000 children under five years of age will require six tablets of mebendazole in a year. The total requirement for a district will be 816,000 tablets of mebendazole. You may have to provide for this requirement from your state budget after reviewing the total allocation for medicines including mebendazole from all sources. You will also determine the total mebendazole tablets supplied through ICDS and DWCRA in your district and make appropriate adjustments.

ORS packets

A child under 5 years (260,000 in a district of 20 lakh population - i.e. 13%) suffers on an average from 3 episodes of diarrhoea every year. Thus there will be about 780,000 episodes of diarrhoea every year. Of these, only 10% episodes with dehydration would need ORS packets. The remaining episodes can be managed with home available fluids. We will provide for 3 packets for every episode.

Thus, 780,000 episodes would require about 2,340,000 packets for 100% coverage in the districts under the programme. In the first years, only 50% coverage with ORS packets in the project districts is envisaged. It will take you some time to set up ORS depot in every village until then, not all diarrhoeas with dehydration will be able to come to your health system for ORS packets. **Please note that you will get limited supply of ORS packets only. You should encourage your workers to give ORS packets to the most needy children. Parents of other children who can afford buying ORS packets from the market should be**

encouraged to buy them. This means that your health workers should identify the sources of commercial ORS supply nearest to the village. Care should be taken to check whether the commercial packets of ORS available in your district and various stores are conforming to the WHO formula.

Cotrimoxazole Tablets (Paediatric)

The total episodes of acute respiratory infections (ARI) at the rate of 3 episodes per under 5 year child per year would be equal to diarrhoeal episodes as calculated above, that is 780,000 episodes. Only 10% of the episodes are pneumonia requiring anti-biotic therapy. Thus 78,000 episodes of pneumonia will, on an average, need 20 paediatric tablets each, that is a total annual requirement of 15.6 lakh tablets. As in the case of diarrhoea, 50% coverage is envisaged in the first year.

These norms will be reviewed every year and revised based on experiences gained.

EXERCISE H

Using the above norms, calculate the half-yearly requirement for:

(a) A sub-centre having 5,000 population.
(b) A block having 100,000 population.
(c) A district having 1,500,000 population.

	Sub-Centre need [5,000]	Block need [100,000]	District need [1,500,000]
Tablets IFA (large)			
Syrup Vitamin A			
ORS packets			
Tablets Cotrimoxazole			

7.4 MAINTAIN OTHER EQUIPMENT

B.P. Instrument

- You should explain to the health worker that - the aneroid sphygmomanometer should be handled gently. Do not let it drop.
- While taking out the instrument from bag, hold the dial and not the cuff otherwise the dial may be damaged by falling.

Weighing Scale (newborn - colour-coded)

You should ensure that the female health worker and TBAs observe the following:

- The screw at the top should be rotated after the sting is attached to correct zero error.
- The maximum weight that it can measure accurately is 5 kg. Hence it should be used for weighing newborn only.
- Check the accuracy of the scale by weighing a known weight frequently
- Store the scale properly to avoid rusting.

In order to have functional referral facilities in your district, you will also have to liaise from time to time with superintendents of hospitals. The purpose of these meetings will be to get highest priority from maintenance and repair of equipment related to surgery, anaesthesia, blood banking and laboratory services without which the emergency patients referred by your health workers will not be given due care.

7.5 MAINTAIN AND DISTRIBUTE DRUGS

- In general all drugs being supplied should be kept in a cool dry place protected from direct sunlight, air and moisture. You should ensure that the health worker is keeping these drugs at sub-centre properly during your supervisory visits.

- Keep your drug store clean and ensure that the drugs are protected from water seepage especially during rainy season.

- Ensure that all drugs are used before the expiry date. You should follow the "First In First Out" principle for drugs just as you follow it for vaccines. Therefore, it is advisable to keep the newly arrived medicine stocks behind the earlier ones (rotation of stocks).

- Do not use the drugs if they have changed colour or there is a change in consistency. However, you should ascertain if improper storage caused the problem.

- Sometimes you will have to see if specific items in the drug list need to be replenished from the PHC/District stores, or from the 10% additional drug kits that will be supplied to your CHCs/PHC. Also, you should encourage health workers to share/exchange drug items during outbreaks, etc, as they may not be consumed at the same pace in all centres.

Distribute Drugs

Vitamin A, ORS packets, Cotrimoxazole tablets, IFA tablets will be provided in pre-packed kits for each sub-centre at regular intervals. You should ensure timely delivery of these kits to every sub-centre. These can be delivered conveniently either during your supervisory visit to the field or during meeting at the PHC.

7.6 CHECKLIST FOR MONITORING DRUG USAGE *

Description	Cotrimoxazole Tablet	IFA Tablet	ORS Packet	Vitamin A
1. Are all the drugs available?				
2. Are they stored in a cool dry place away from sunlight?				
3. Are drugs being used as per established norms/criteria?				
4. Are they given in correct dosage?				
5. Is the mother receiving adequate instructions?				
6. Is the record of drug distribution maintained?				
7. Are the number of mothers/children who get these drugs too little/too much in comparison to what you expect in a month?				
8. Was the worker capable of dealing with drug side effects (if occurred)?				
9. Did you get any positive/negative feedback from some mothers about these drugs?				
10. Did you appreciate/encourage the worker for any positive points related to drug storage or usage?				
11. Did you succeed in correcting the knowledge or skill gaps in drug dispensing?				
12. Has suitable action been taken for problems related to drug usage identified in last visit/meeting?				

* The dosage and instruction for drug use are included in the health worker's manual.

7.7 CHECKLIST FOR MONITORING EQUIPMENT USE

Checklist	B.P. Instrument	Weighing Scale(Adult)
1. Is the instrument available? 2. Is it in working order? 3. Does the worker know how to use it? 4. Does the worker know the actions to be taken if BP of pregnant women is high or weight of newborn is low? 5. How many pregnant women with high BP and newborn having weight less than 2.5 kg have been identified in last one month?		

REMEMBER THIS ABOUT MANAGING COLD CHAIN SYSTEM

* Enumerate eligible and compare with the estimated number.

* Based on number of enumerated eligible calculate requirements of vaccines and other supplies. Take into account the vaccine administration rate as well as number of sessions scheduled for calculating vaccine requirements. Use the given norms and ready reckoner for calculating requirements of other supplies.

* Maintain the Cold chain equipment and appropriate spares at all levels. Use checklist of preventive maintenance for ILR/Freezer, generator and WIC.

* Maintain vaccines within the recommended temperature zone during distribution and storage. Store drugs properly.

* Monitor cold chain by monitoring:

  - o Supplies
  - o Temperature during transport
  - o Storage temperature
  - o Potency test
  - o Adverse reactions

* Monitor drug and equipment use as per checklist and details in the health workers manual.

PERIODIC VACCINE REQUIREMENT IN VIALS (SESSION-WISE)
[OPV/BCG = 20 DOSES PER VIAL AND ALL OTHERS = 10 DOSES VIAL]

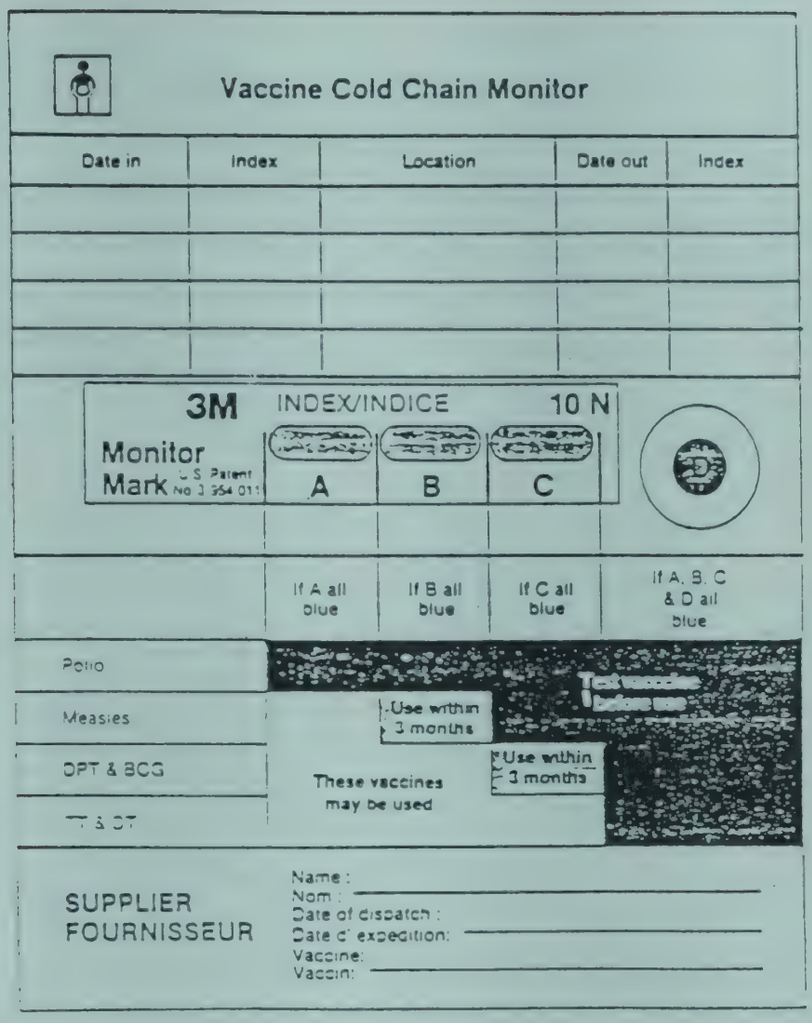
D E S C R I P T I O N	DPT	OPV	BCG	MEASLES	TT(PW)
SUB-CENTRE : 1 VILLAGE (2,000 POPULATION)	3	2	1	1	2
[5,000] 3 VILLAGE (1,000 POPULATION)	6	3	3	3	3
In 4 sessions per month	9	5	4	4	5
In one year	108	60	48	48	60
PHC : 6 sub-centres	648	240	288	288	360
[30,000 At PHC (once per week)	156	104	52	52	52
population] Total	804	344	340	340	412
CHC - 20 Sub-centres	2160	1200	960	960	1200
[100,000 At PHC (3) once per week	468	312	156	156	156
population] at CHC biweekly	316	208	104	104	104
Total	3044	1720	1220	1220	1460
District - 400 sub-centres	43200	24000	19200	19200	2400
[2,000,000 At PHCs (50) once per week	7800	5200	2600	2600	2600
population CHC/sub-district biweekly	8320	4160	2080	2080	2080
District hospital (daily)	1500	900	300	300	1200
Sub-divisional hospital (3) all days	2844	1872	936	936	2340
Total	63644	35232	25116	25116	10620

The above example has been worked out on the basis of certain assumptions which are:

- A sub-centre with 4 villages of which 3 are with 1,000 population each and 1 is with 2,000 population.
- A PHC with 6 sub-centres of the type mentioned above.
- A CHC with 60 sub-centres and 3 PHCs in its area.
- A district with 400 sub-centres, 50 PHCs and 20 CHCs.

The actual calculations for your district may be worked out as an exercise using the above norms.

ANNEXURES



Vaccine Cold Chain Monitor

Date in	Index	Location	Date out	Index

3M Monitor Mark — U.S. Patent No. 3 364 011

INDEX/INDICE 10 N

A B C

	If A all blue	If B all blue	If C all blue	If A, B, C & D all blue
Polio				
Measles	Use within 3 months			
DPT & BCG	Use within 3 months			
TT & DT	These vaccines may be used			

SUPPLIER
FOURNISSEUR

Name :
Nom :
Date of dispatch :
Date d' expedition:
Vaccine:
Vaccin:

Keep the Cold Chain Monitor with your vaccine

When the Monitor arrives...
complete the top part of the card
— fill in the date
— fill in the index (A, B, C, or D)
— fill in the location

When the Monitor leaves...
complete the top part of the card
— fill in the date
— fill in the index (A, B, C or D)

If windows A, B, C, & D are all white use vaccines normally.

If the windows A to C are completely blue, but window D is still white it means that the vaccine has been exposed to a temperature above 10°C but below 34°C for the following number of days :

	INDEX		
	A	B	C
At a temperature of : 12°C	3 days	8 days	14 days
21°C	2 days	4 days	11 days

If only window D is blue it means that there has been a break in the cold chain of a temperature higher than 34°C for a period of at least two hours. Check the cold chain — Use vaccines normally.

TEMPERATURE RECORD BOOK

NOVEMBER

Please answer : Yes/No
(on last day of the month)

A. Is the refrigerator
1. level? ____
2. away from sunlight? ____
3. locked? ____
4. defrosted periodically? ____
5. plugged to socket permanently? ____
6. used for food or drink? ____

B. Are the vaccines
1. stacked neatly? ____
2. rotated? ____
3. kept in the door? ____
4. frozen? (except polio) ____
5. date expired? ____

C. No. of ice packs prepared during the month ____

D.

	Temperaure > 8°C		
Duration (hours)	1 – 2	3 – 4	5+
Frequency			

Date	Temperature (°C) in refrigerator		Power failure (duration in hours)
	10 am	4 pm	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Note : Medical officer is to counter sign it once a week.

DECEMBER

Please answer : Yes/No
(on last day of the month)

A. Is the refrigerator
1. level? ____
2. away from sunlight? ____
3. locked? ____
4. defrosted periodically? ____
5. plugged to socket permanently? ____
6. used for food or drink? ____

B. Are the vaccines
1. stacked neatly? ____
2. rotated? ____
3. kept in the door? ____
4. frozen? (except polio) ____
5. date expired? ____

C. No. of ice packs prepared during the month ____

D.

	Temperaure > 8°C		
Duration (hours)	1 – 2	3 – 4	5+
Frequency			

Date	Temperature (°C) in refrigerator		Power failure (duration in hours)
	10 am	4 pm	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			

Note : Medical officer is to counter sign it once a week.

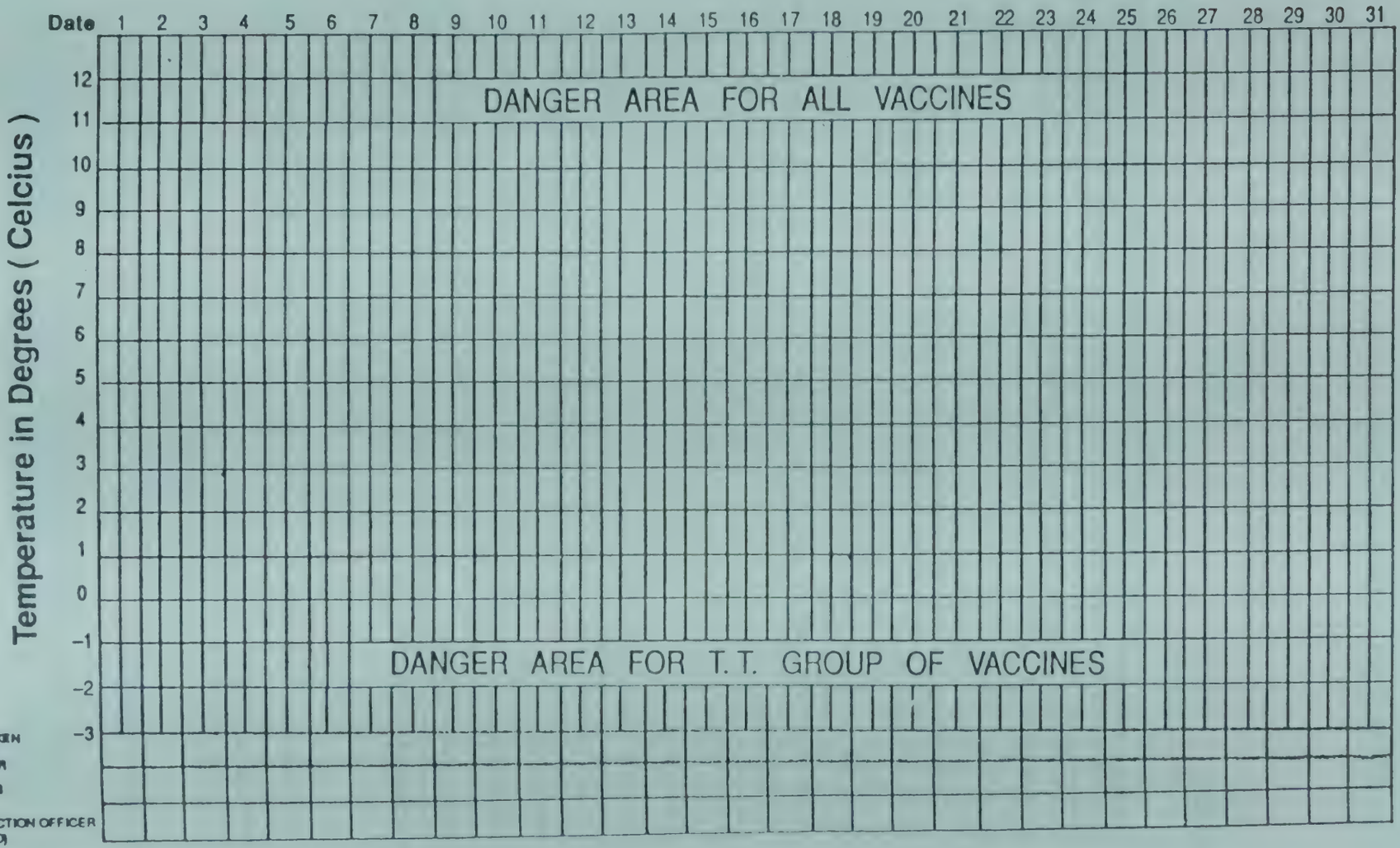
NATIONAL IMMUNIZATION MISSION

राष्ट्रीय टीका कार्यक्रम

TEMPERATURE MONITOR CHART

(REFRIGERATOR I.L.R./ W.I.C.)

MONTH..... P.H.C..... MAKE OF THE UNIT.....
(Eg ILR 240 ILR 140, WIC etc.)



Please answer Yes/No.

A. IS THE REFRIGERATOR
1. LEVEL ?
2. AWAY FROM SUNLIGHT ?
3. LOCKED ?
4. PLUGGED TO SOCKET PERMANENTLY?
5. USED FOR FOOD OR DRIN

B. ARE THE VACCINES
1. STACKED NEATLY?
2. ROTATED?
3. FROZEN?
4. DATE EXPIRED?

NO. OF ICE PACKS TAKEN OUT FOR THE USE IN VACCINE/DAY CARRIER

DATE OF DEFROSTING

SIGNATURE OF INSPECTION OFFICER
(SEPIO, CMO, DHO, DIO)

Annexure VI

WALK-IN-COLD ROOM
CHECK CHART (FOR OPERATOR)

Date:
Day :

Attendant:

1. Temperature Reading :(°C)	AM/PM		AM/PM				AM/PM					
Thermometer on Unit - 1												
Thermometer on Unit - 2												
Temperature Recorder												
2. Unit working at the time of reading					Unit - 1			Unit - 2				
3. Unit Defrosting at the time of reading					YES			NO				
4. Engine fuel level in tank	OK		Low		Filled		Litres					
5. Leakage in Engine lube oil and or fuel system	NO		YES		Notified Tech.							
DAY : MONDAY/FRIDAY	Cell-1		Cell-2		Cell-3		Cell-4		Cell-5		Cell-6	
6. Battery specific gravity												
7. Battery acid level	OK		LOW		Topped up with D/W							
8. Battery terminal/pole connections	OK		Loose/Defective		Rectified							
9. Battery firm on frame	YES		NO		Rectified							
DAY : MONDAY												
10. Generator set							Cleaned					
11. Engine lube oil level	OK		LOW		Added (Approx.)				Litres			
12. Starting of Generator	Started		Could not be started, Notified Tech.									
	Lube oil pressure Generator Voltage						p.s.i./BAR volts					
13. Temperature Recorder Chart							Changed					
14. Floor and outside of cold room							Cleaned					
15. Unit selector switch was set for operation of changed for operation of							Unit Unit					

IMPORTANT NOTE:

FOR ANY ABNORMALITIES OBSERVED - NOTIFY MAINTENANCE TECHNICIAN
NOTE THE TIME AND RECORD IN DETAIL OF OBSERVATIONS ON THE NEXT PAGE.

ABNORMALITIES OBSERVED:

Date :
Time :

Attendant :

Details :

TEMPERATURE READINGS DURING ABNORMAL CONDITION:

Time AM/PM	Unit - 1	Unit - 2	Dial Thermometer	Temperature Recorder

Action Taken by Technician and Remarks:

WIC/WIF CHECKLIST FOR TECHNICIANS

Location :_____
Date :_____

Sr. No.	Item Description	YES	NO	Readings (Where read)
A.	POWER SUPPLY AND GENERATING SET			
1.	Power supply switches and fuses healthy			
2.	Power supply voltage			
3.	Standby generator connected			
4.	Battery in good condition			
5.	Battery acid specific gravity			
6.	Battery electrolyte level proper			
7.	Battery finally fitted to the frame.			
8.	Battery terminal connections proper			
9.	Engine lube oil level correct			
10.	Any visible leakage of engine lube oil			
11.	Generator has sufficient fuel in the tank			
12.	Any visible leakage of fuel			
13.	Reserve fuel in stock			
14.	Generator clean from dirt and dust			
15.	Generator firm on mounting on the floor			
16.	Stop solenoid pulls in the plunger fully when "stop" button is pressed (for diesel generator only)			
17.	Generator can be started manually			
18.	Generator can be stopped manually			
19.	Generator starts automatically on putting off the mains power			
20.	Generator stops automatically on return of mains power			
21.	Generator out-put voltage correct?			
22.	Generator lube oil pressure correct?			
23.	Cooling units run from generator power			
24.	Generator amps when cooling units working from generator supply			
25.	Generator, coupling and alignment proper			
26.	All the exhaust goes out of the room			
27.	Generator room clean and airy			
28.	All cable terminals to generator are firm on their positions			
29.	Any abnormal noise in generator set			
30.	Any abnormal noise in control panel			
31.	Oil filter needs replacement?			
32.	Air filter needs cleaning or replacement?			
B.	COOLING UNITS AND COLD ROOM			
1.	Cooling unit - 1 can work			
2.	Cooling unit - 2 can work			
3.	Units interior clean			
4.	Units condenser coils and pins clean			
5.	Apparent leakage of refrigerant from the system			
6.	Heavy frosting on evaporator coils			
7.	Evaporator fans working properly			
8.	Condenser fans working properly			
9.	Units starts and goes off properly within specified range of set temp.			
10.	Any abnormal noise in the compressor			
11.	Any abnormal noise in the unit			
12.	Defrost drainage pipe connected properly			
13.	Leakage in joints of panels			
14.	Door closing properly without gap			
15.	Lock on door			
16.	Wall mounted thermometer present			
17.	Cold room temp. alarm system working properly			
18.	Temperature recorder working properly			
19.	Past temp recorder charts preserved properly			
20.	Present temp recorder chart, correctly set for date and time			
21.	Temp recorder chart advancing with time			
22.	Present temperature recording			
23.	Thermometers on units working properly			
C.	Any other observations/remarks/repairs done/spares fitted (write in detail)			

Technician:_____ Date_____ Place_____

MAINTENANCE SCHEDULE:

ACTION \ WHEN	DAILY	First Month or 20 Hours	Every 3 Month or 50 Hours	Every 6 Month or 100 Hours	Every Year or 300 Hours
Check Engine Oil Level	■				
Change Engine Oil		■		■	
Check Air-Cleaner Element	■				
Clean Air-Cleaner Element			■		
Clean Fuel-Filter				■	
Check & Clean Injector Nozzle *					■
Check & Adjust Valve Clearance *					■
Clean Combustion Chamber *					■
Clean Fuel-Tank					■
Clean Fuel-Line					■

* by experienced technician only

- HP - 10 (max.)
- RPM - 3,000
- Fuel Tank capacity - 5 litres
- Oil Slump capacity - 1.8 kg.
- Valve clearance, inlet - 0.10 mm
  (Cold) Exhaust - 0.10 mm
- Injector pressure - 200-210 kg/cm2
- Engine oil - SAE 10-40 (depending ambient temp. consult hand book)

HONDA G-400 - PETROL ENGINE

MAINTENANCE SCHEDULE:

WHEN / ACTION	DAILY	First Month or 20 Hours	Every 3 Month or 50 Hours	Every 6 Month or 100 Hours	Every Year or 300 Hours
Check Engine Oil Level	■				
Change Engine Oil		■		■	
Check Air-Cleaner Element	■				
Clean Air-Cleaner Element			■		
Clean and adjust spark-plug				■	
Check and adjust ignition timing *				■	
Check and adjust valve clearance *					■
Clean Combustion Chamber *					■
Clean Fuel-Tank					■
Clean Fuel-Line					■

* by experienced technician only

- Engine Oil capacity - 1.2 kg.
- Spark-Plug gap - 0.6 to 0.7 mm
- Valve clearance, inlet - 0.06 to 0.12 mm
  (Cold) Exhaust - 0.09 to 0.15 mm
- Engine oil - SAE 10W - 40 (depending ambient temp. consult handbook)
- RPM - 3,000
- HP - 10 (max.)
- Fuel Tank capacity 10 litres

MOTHER-INFANT IMMUNIZATION CARD

DURING THE SECOND AND THIRD YEAR (12-36 MONTHS)

DATE
DPT-B

DATE
Polio-B

DATE
Vitamin A-2

DATE
Vitamin A-3

DATE
Vitamin A-4

DATE
Vitamin A-5

ial number

me of the pregnant woman

sband's name

pected date of delivery

use number Village/Ward

l.C./Town

b-centre/Clinic

me of the infant

x of the infant Date of birth

This part of the card should remain with the health worker.

Health worker's signature

TEAR ALONG THE DOTTED LINE

II-III DURING THE SECOND AND THIRD YEAR (12-36 MONTHS)

DATE
DPT-B

DATE
Polio-B

DATE
Vitamin A-2

DATE
Vitamin A-3

DATE
Vitamin A-4

DATE
Vitamin A-5

THE IDEAL IMMUNIZATION SCHEDULE

FOR THE PREGNANT WOMAN:	
Early in pregnancy	T.T. – 1 (injection)
One month after T.T.-1	T.T. – 2 or T.T. booster (injection)
FOR THE INFANT:	
At birth	B.C.G. (injection)
	D.P.T. – 1 (injection) and O.P.V. – 1 (dose)
At 2½ months	D.P.T. – 2 (injection) and O.P.V. – 2 (dose)
At 3½ months	D.P.T. – 3 (injection) and O.P.V. – 3 (dose)
At 9 months	Measles (injection)
At 16 to 24 months	D.P.T. Booster (injection) and O.P.V. Booster (dose)

- ☐ **Even if you are late for an injection/dose, you must still get it. Consult your health worker regarding this.**
- ☐ Please keep this card carefully.
- ☐ Whenever you come to the health centre, bring this card with you.
- ☐ After every injection/dose, get the date of receiving it recorded in this card.
- If the infant has been delivered in a hospital/clinic, she should be given the B.C.G. injection at birth.
- This part of the card should remain with the pregnant woman/infant's mother.

TEAR ALONG THE DOTTED LINE

MOTHER-INFANT IMMUNIZATION CARD

Serial number

Name of the pregnant woman

Husband's name

Expected date of delivery

House number Village/Ward

P.H.C./Town

Sub-centre/Clinic

Name of the infant

Sex of the infant Date of birth

NATIONAL IMMUNIZATION MISSION
Government of India

RECORD OF A.N.C. AND IMMUNIZATION DURING PREGNANCY

DATE / A.N.C.—1 | DATE / A.N.C.—2 | DATE / A.N.C.—3

DATE / IRON | DATE / IRON | DATE / IRON

DATE / T.T.—1 | DATE / T.T.—2 (Booster)

- The pregnant woman should regularly meet the health worker to get ante-natal check-ups (A.N.C.) done.
- Remember, it is important to get 2 T.T. injections or 1 T.T. booster injection, and to take 100 iron tablets in 3 months, during pregnancy.
- Remember that T.T.-2 (Booster) should be given at least 1 month before the expected date of delivery.

NATIONAL IMMUNIZATION MISSION
Government of India

INFANT IMMUNIZATION RECORD

I. DURING THE FIRST YEAR (0-12 MONTHS)

DATE / B.C.G.

DATE / D.P.T.—1 | DATE / D.P.T.—2 | DATE / D.P.T.—3

DATE / O.P.V.—1 | DATE / O.P.V.—2 | DATE / O.P.V.—3

DATE / Measles' AND DATE / Vitamin A-1

- Get all the injections/doses at the scheduled time and get them recorded here.
- Remember, there must be a gap of one month between every injection/dose of D.P.T./O.P.V.

Health worker's signature

NATIONAL IMMUNIZATION MISSION
Government of India

TEAR ALONG THE DOTTED LINE

RECORD OF A.N.C. AND IMMUNIZATION DURING PREGNANCY

DATE / A.N.C.—1 | DATE / A.N.C.—2 | DATE / A.N.C.—3

DATE / IRON | DATE / IRON | DATE / IRON

DATE / T.T.—1 | DATE / T.T.—2 (Booster)

INFANT IMMUNIZATION RECORD

I. DURING THE FIRST YEAR (0-12 MONTHS)

DATE / B.C.G.

DATE / D.P.T.—1 | DATE / D.P.T.—2 | DATE / D.P.T.—3

DATE / O.P.V.—1 | DATE / O.P.V.—2 | DATE / O.P.V.—3

DATE / Measles AND DATE / Vitamin A-1

NATIONAL IMMUNIZATION MISSION
Government of India

INSTRUCTIONS FOR FILLING SUB-CENTRE MOTHER AND CHILD CARE RECORD

1. This register has been developed for you to record all MCH activities of the sub-centre area.

2. Separaters are provided to separate the records of each village.

3. On the separaters fill in the details of the village.

4. Binding of the register is such that it will help you to insert extra leaves whenever required.

5. On the top of every page enter the year. For example enter 1992-93 for cases to be registered during 1st April 1992 to 31st March 1993.

6. Col.2

   During the field visit you should identify all pregnant women and register them in this column after giving a Serial No.

7. The same Serial No. should also be entered in the MCH Card. Please remember to indicate the year of registration in the card for example a case listed at S.No.2 in 1992-93 should be written on the card as 2/92-93.

8. Col.5

   The number of pregnancies the woman had including the present one should be entered.

9. Col. 10, 14 & 18

   While examining the pregnant women look for certain danger signs which may require your personal continuous supervision and/or referral. These danger signs are:-

   a. Anaemia
   b. B.P. above 140 mm Hg.
   c. Abnormal weight gain (>5 kg/month)
   d. First pregnancy with age less than 20 and more than 30 years
   e. More than 4 pregnancies
   f. Bleeding during pregnancy (APH)
   g. Ceasarian operation during previous pregnancy
   h. Abnormal/lack of movements
   i. Convulsions

   Please enter appropriate code from the above list.

10. Col. 19

Please choose the appropriate code from the following:

a. At home
b. At sub-centre
c. Other institution including private hospitals

11. Col. 20

Please enter appropriate code from the following on the basis of delivery conducted by:

a. Doctor
b. ANM/LHV/Nurse
c. Trained Dai
d. Untrained Dai and/or others (relations etc)

12. Col. 21

Choose the appropriate code from the following and enter in this column.

a. Mother and child healthy
b. Mother died
c. Child died
d. Dead child born

13. Col. 23

Please enter:

a. If the child was healthy upto 7 days;
b. If the child was healthy upto 28 days;
c. If the child dies within 7 days, and
d. If it dies after 7 days but before 28 days

14. You are aware that the primary vaccination i.e. one dose of BCG, three doses of DPT and OPV each, one dose of measles and the first dose of Vitamin A should be given before the completion of the first year of the child. Hence at Col.36 fill in the code as:

a. if primary immunization was completed before the first year of the child;

b. if primary immunization was not completed before the first year of the child.

MOTHER AND CHILD CARE RECORD

MOTHER'S RECORD

Sl. No.	Name of pregnant woman	Age	Husband' name & Address	Order of pregnanc	Expected Date of delivery	ANC-1				ANC-2					ANC-3			Place of delivery	Delivery attended by	Delivery outcome **
						TT-1 date	IFA Qty	Wt. Kg.	Danger Code *	TT-2/B Date	IFA Qty.	Wt. Kg	Danger Code *	Date	IFA Qty.	Wt. Kg	Danger Code *			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

MOTHER AND CHILD CARE RECORD

CHILD'S RECORD

REGISTRATION YEAR 199___

Weight at birth	Child was healthy upto 7 or 28 days	Name of the child	Date of Birth	Sex	Date of BCG	Dates of OPV Doses			Dates of DPT Doses			Date of Measles dose	Date of Vit. A 1st dose	Immun.* Status 1st year	Date of OPV B dose	Date of DPT-B dose	Dates of Vit. A doses			
						1st	2nd	3rd	1st	2nd	3rd						2nd dose	3rd dose	4th dose	5th dose
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42

MONTHLY PHC REPORT

Reporting Date:_____

P.H.C._____District_____

State_____Month_____Year_____

Yearly Target I) Infants_____II) Pregnant Women_____

Number of Sessions a) Planned_____ b) Actually Held_____

A. SURVEILLANCE

Disease		Number Reported			
		For the Month		Cummulative Since April	
		Cases	Deaths	Cases	Deaths
Diphtheria Pertussis Neonatal Tetanus Tetanus (others) Poliomyelitis (Acute) Measles					
Under five years	Tuberculosis Pneumonia Acute Diarrhoea Dysentry				
Maternal Deaths (Repoorted) : Before Delivery During Delivery Within 6 weeks of delivery				[redacted]	

B. PERFORMANCE

			Dose	No.of Beneficiaries		Cummulative since April	
PREGNANT WOMEN	T T		1 2/B				
	IFA TABLETS	(Prophylactic) (Theraputic)		Initiated	Completed	Initiated	Completed
CHILDREN				Under 1Yr	Over 1 Yr	Under 1 Yr	Over 1 Yr
	B C G		1				
	O P V		1 2 3				
	D P T		1 2 3				
	MEASLES Vitamin A OPV Booster DPT Booster		1 1 1 1				
	Vitamin A		2 3 4 5	[redacted]		[redacted]	

CHILDREN	DT (5 Years)	B	[redacted]		[redacted]	
	TT (10 Years)	B				
	TT (16 Years)	1 2				

ANTE-NATAL CARE

Cases		During the month	Cummulative since April
Registered Institutional Deliveries Complicated Cases referred			
Domicilliary deliveries conducted by	HW(F)/LHV Trained Dais Others		
Condition of newborn at birth	Weight below 2,000 gm. Weight 2,000-2,500 gm. Weight 2,500 and above Weight not taken Still born		
Abortion			

C. SUPPLY POSITION

Vaccine/Drugs	Opening Balance	Received during the month	Consumed during the month	Balance at the end of month
DPT OPV BCG MEASLES TT DT Syringes 2 ml Syringes 1 ml Needles 20 G Needles 23 G Needles 26 G Immunization Cards				

D. STATUS OF EQUIPMENT (inlcuidng deep freezers, ILRs, voltage stabilizers, vaccine carriers, cold boxes, weighing machines, BP instruments, vehicles etc.)

Equipment/ Make	Machine Number	Whether working	If not, date of breakdown	Date of Intimation	Remarks*

* Please mention in this column: a) If machine is beyond repair
b) If the machine has been attended to by the mechanic within a week of information.

E. UNTOWARD REACTIONS

1. Reported deaths associated with immunization 2. Number of absessess 3. Other complications	

Date:
To:
The District M.C.H. Officer

Signature of Medical Officer

MONTHLY DISTRICT REPORT

Reporting Date:_____

No. of PHCs_____District_____

State_____Month_____Year_____

Yearly Target I) Infants_____II) Pregnant Women_____

Number of Sessions a) Planned_____ b) Actually Held_____

A. SURVEILLANCE

Disease		Number Reported			
		For the Month		Cummulative Since April	
		Cases	Deaths	Cases	Deaths
Diphtheria Pertussis Neonatal Tetanus Tetanus (others) Poliomyelitis (Acute) Measles					
Under five years	Tuberculosis Pneumonia Acute Diarrhoea Dysentry				
Maternal Deaths (Repoorted) : Before Delivery During Delivery Within 6 weeks of delivery				[redacted]	

B. PERFORMANCE

			Dose	No.of Beneficiaries		Cummulative since April	
PREGNANT WOMEN	TT		1 2/B				
	IFA TABLETS	(Prophylactic) (Theraputic)		Initiated	Completed	Initiated	Completed
CHILDREN				Under 1Yr	Over 1 Yr	Under 1 Yr	Over 1 Yr
	B C G		1				
	O P V		1 2 3				
	D P T		1 2 3				
	MEASLES Vitamin A OPV Booster DPT Booster		1 1 1 1				
	Vitamin A		2 3 4 5	[redacted]		[redacted]	
	DT (5 Years)		B	[redacted]		[redacted]	
CHILDREN	TT (10 Years)		B	[redacted]		[redacted]	
	TT (16 Years)		1 2	[redacted]		[redacted]	

ANTE-NATAL CARE

Cases		During the month	Cummulative since April
Registered Institutional Deliveries Complicated Cases referred			
Domicilliary deliveries conducted by	HW(F)/LHV Trained Dais Others		
Condition of newborn at birth	Weight below 2,000 gm. Weight 2,000-2,500 gm. Weight 2,500 and above Weight not taken Still born		
Abortion			

C. SUPPLY POSITION

Vaccine/Drugs	Opening Balance	Received during the month	Consumed during the month	Balance at the end of month
DPT OPV BCG MEASLES TT DT Syringes 2 ml Syringes 1 ml Needles 20 G Needles 23 G Needles 26 G Immunization Cards				

D. STATUS OF COLD CHAIN EQUIPMENT

Equipment ILR/DEEP FREEZER	Total Supplied	Total not working	No. attended to within 1 week	No. not working for more than 1 month*	No.Beyond Repair
ILR 300 Litre Deep freezer 300 Litre ILR 140 litre Deep freezer 140 litre					

* Excluding those beyond repair.

Please attach details of beyond repair equipment as:

Location	Machine No.	Date of installation	Out of order since

E. UNTOWARD REACTIONS

1. Reported deaths associated with immunization 2. Number of absessess 3. Other complications	

Date:

District MCH Officer

To:

1. Monitoring and Evaluation Unit, Child Survival & Safe Motherhood Programme Division
   Ministry of Health & Family Welfare, Nirman Bhavan
   New Delhi 110011

2. State MCH Officer

ANNEXURE-IV

DELIVERY KIT FOR HEALTH WORKER

S.No.	Item description	Qty.
1.	B.P. instrument	1 each
2.	Color coded Weighing Scale (Baby)	3 each
3.	Instrument Sterilizer SS 222 x 22 x 41 mm	1 each
4.	Spring Type Dressing Forceps - Stainless Steel (150 mm)	1 each
5.	Kidney Basin - Stainless Steel (825 ml/280 oz)	1 each
6.	Sponge bowl - Stainless Steel (600 ml)	2 each
7.	Uretheral Catheter (12 Fr) rubber	1 each
8.	Clear vinyl plastic sheeting (910 mm wide)	2 each
9.	Enema can with tubing	1 each
10.	Clinical oral thermometer (Dual Celsius/Fahrenheit Scale)	1each
11.	Clinical rectal thermometer (Dual Celsius/Fahrenheit SCale)	1 each
12.	Surgeon's hand brush with while nylon bristles	1 each
13.	Mucus Extractor	1 each
14.	Artery Forceps	2 each
15.	Cord-cutting scissors	1 each
16.	Cord ties/rubber band	1 packet
17.	Nail Clipper	1 packet
18.	Foetoscope (Stethoscope Foetal)	1 packet

* This kit containing 18 items will be given as a one-time supply to all health workers of the districts taken up under the programme in a phased manner.

Notes

Notes

Notes

Education is empowerment. Every girl and boy must be helped to complete atleast primary education in school. This will facilitate attainment of good health. In this endeavour all of us can contribute and make a difference.

You can make a big difference if you.....

- **ask every family you meet during your health work, whether their children are in primary school;**
- **persuade them to send all their children including girls, to attend and complete primary school, if they are not in school;**
- **identify the primary school teachers of the villages covered by you;**
- **facilitate communication between the family and the school teacher whenever possible;**
- **encourage all functionaries working with you to actively promote school attendance and completion of primary school; ask them regularly, what they have done;**
- **include a panel/discussion on primary education whenever you organize a health exhibition/camp.**